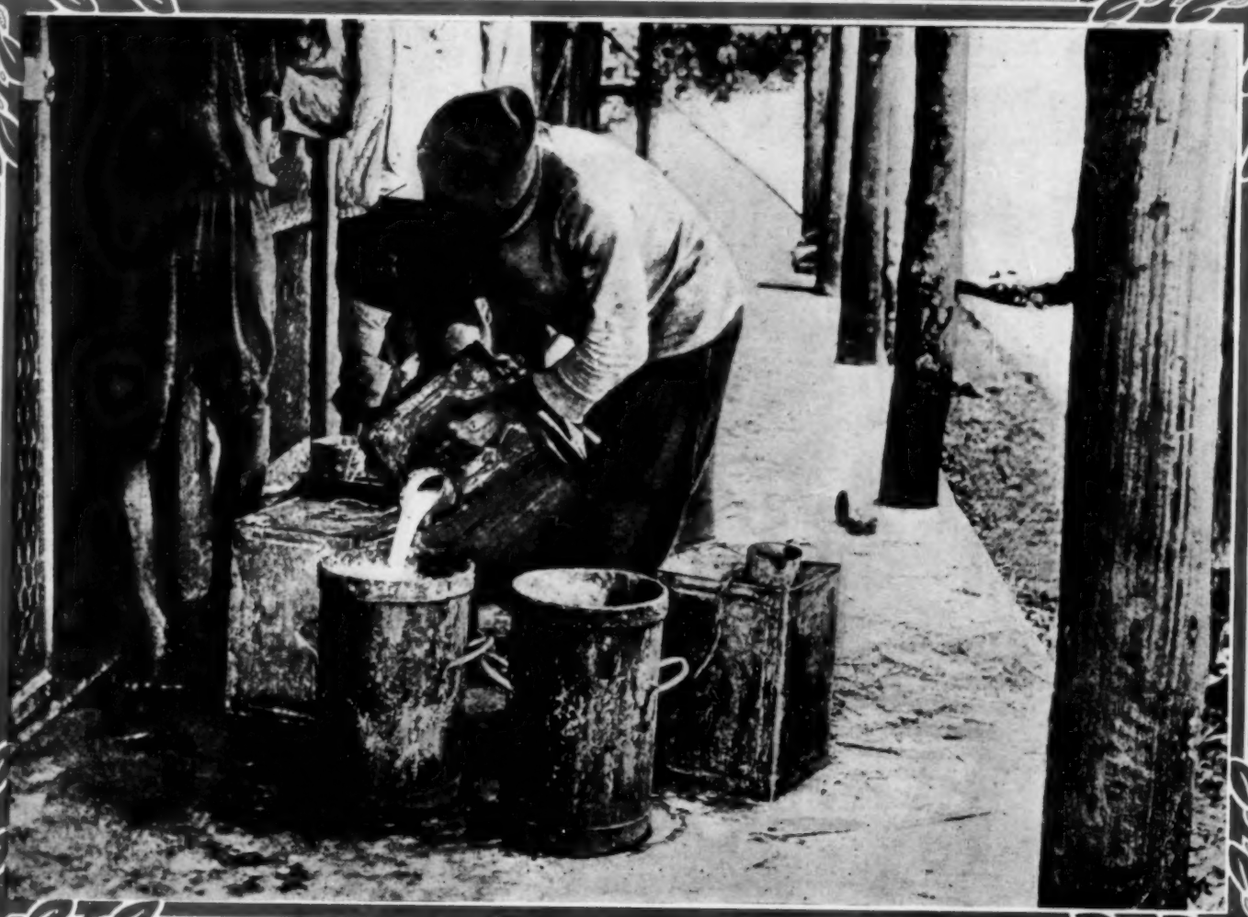
THE RUBBER AGE



Measuring Latex on an African Rubber Plantation

April 25th
1917

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THE RUBBER AGE

APRIL 25, 1917 VOL. I. NO. 3

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120 WEST 32D STREET NEW YORK

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The GARDNER, MOFFAT COMPANY, Inc.

120 West 32d Street, New York

THE RUBBER AGE

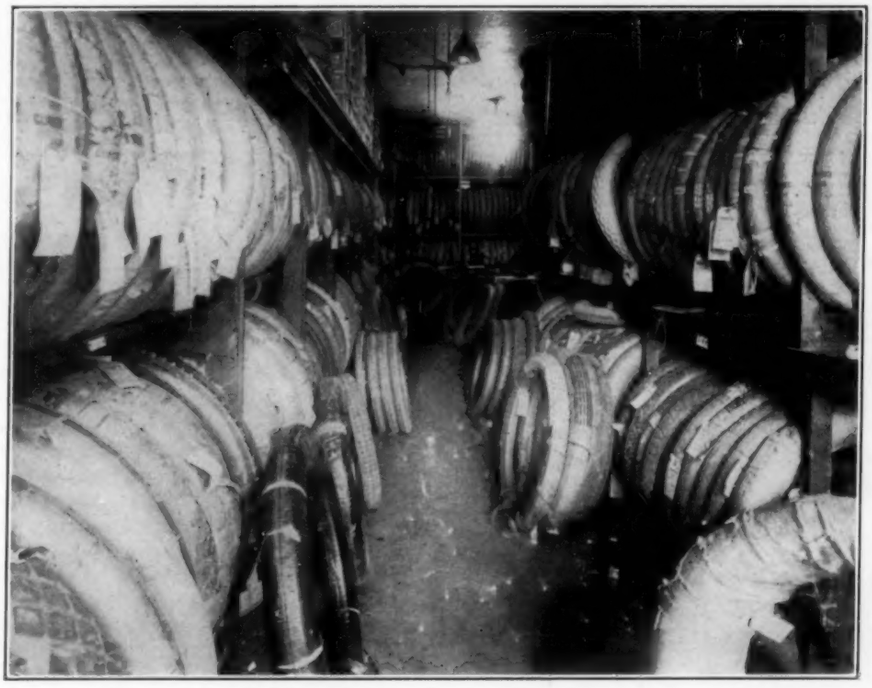
An Accounting System for Automobile Accessories and Tires Stores

By H. King Halikman

The King Tire Co.

The average dealer in automobile accessories and tires takes great risks. His chance-taking is not from choice, nor is it directly connected with money transactions, but is due to the nature of things in which he is obliged to invest his money, and to the lack of proper systems for keeping account of business transactions.

The writer, who conducts a large wholesale and retail business in automobile accessories and tires, was one of those average dealers until he suddenly awoke to the danger of carrying on business in a haphazard manner and set to work with an expert accountant to devise a system that would make it possible to keep a constant check on all transactions and items, and which, at the same time, would not be too costly to install and to maintain.



VIEW OF THE TIRE STORE

The result of these efforts is the system explained in the following paragraphs. A system in which tires are kept entirely distinct from the accessories part of the business.

System for Recording Purchases

All orders for merchandise are given out on serially-numbered order forms taken from a bound order book which is provided with a manifolding system so that duplicates of all orders given are preserved for record. The goods, when received, are entered in a loose-leaf receiving book which shows the date of receipt, the "receiving number," the date of the invoice covering the goods, the name of shipper, a description of the goods, their quantity and our order number. A column is provided for check marks. There is also space for stock records which show: stock number, department to which goods belong (tires or accessories), and date on entry in stock record. A special space is provided on this receiving record sheet for goods returned. When filled out this shows whom the goods were received by, the customer who returned them, and this customer's credit number. An extra column is provided for remarks.

When the supplier's bill comes to hand, it is given to a clerk who stamps it with a rubber stamp that shows: invoice number, date of receipt of goods, receiving number, quantity O. K., prices O. K., extensions and additions O. K., pay statement number and claim number, when there is a claim. This clerk refers to our price records which are later described and verifies prices. The same bill then goes to another clerk who refers to the receiving record in checking the bill against quantity received, and to the original order to verify the goods ordered as against the quantity received. If the invoice is not correct due to overcharges or shortages, a claim sheet is used.

These claim sheets are in duplicate pad form and are serially numbered. The original of the claim sheet goes to the supplier whose invoice is wrong and the duplicate of it is attached to the invoice when the latter is sent to the bookkeeper for payment. The bookkeeper checks back the extensions and additions and O. K.'s the invoice if these are correct. He then enters the invoice on a pay statement which

Read conditions of this order on other side, carefully.

The King Tire Co.

AUTOMOBILE ACCESSORIES
TIRES, TUBES, TOOLS AND APPAREL
1985-7 BROADWAY

NEW YORK _____ 191

M _____

SHIP VIA _____

KING TIRE CO.

By _____

ORDER FORM

Conditions under which this order is given.

1. The seller agrees to protect us against all liability, loss or expense for reason of any patent or trade-mark litigation in connection with this purchase.

2. The seller guarantees the quality of the goods ordered herein to be up to the sample submitted, or in case no sample as shown to be of the usual standard of such merchandise and agrees to pay the expense of return of such faulty goods and give credit therefore in full.

3. Payment is to be accepted less the cash discount on 10th of the month following date of arrival of goods, or where dating is agreed upon, on the 10th of the month following said date.

4. The King Tire Co. reserves the right to return at the risk and expense of shipper, or hold subject to shipper's risk and disposal, all goods not up to the standard, or sample, or shipped on time or in quantities different from those ordered, or contrary to instructions herein given.

5. Shipment—All material ordered on reverse side of this blank is to be shipped F. O. B. N. Y. and if transportation charges are not prepaid, we reserve the right to deduct the amount from the face of the invoice, unless otherwise agreed upon. All material must be forwarded by the particular route named except by special permission to the contrary.

6. Prices—If no price is given in the price column the order must not be filled at a higher price than last quoted or charged, unless we are notified beforehand and agree to the advance in price.

BACK OF ORDER FORM

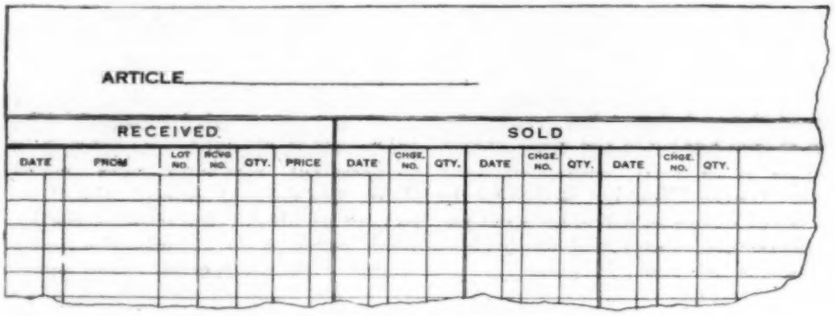
is designed in duplicate and is numbered serially.

Payments

When the bill comes due, the pay statement is entered into an accounts payable and purchase register which is a bound book and shows: pay statement number, name of creditor, accounts payable credit, and has special columns for payment record with date and check number and amount paid. The original amount entered is distributed as follows: to tires, to supplies, to expenses, and to miscellaneous. A column for explanations is provided.

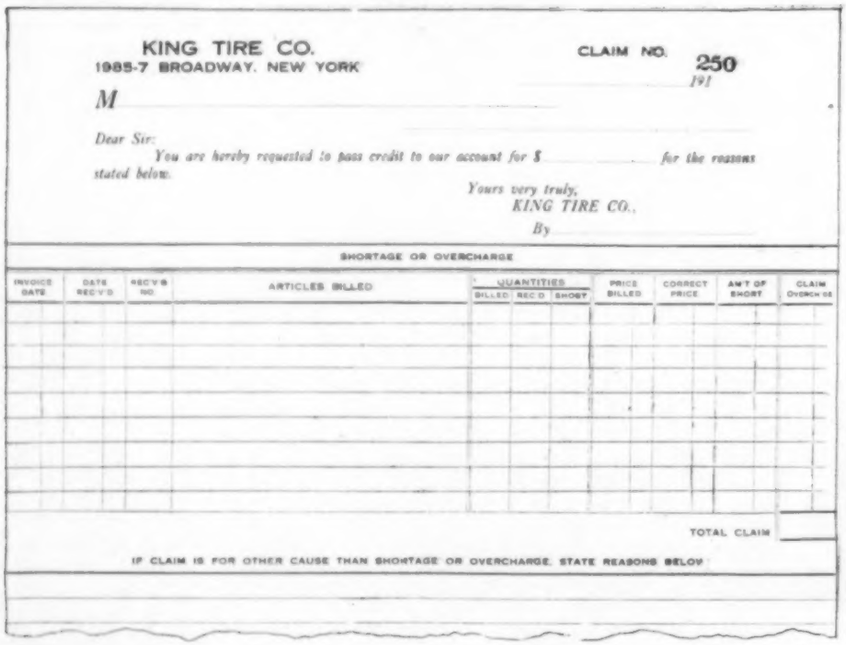
Card Index of Purchases

We also have a card system of purchases which shows prices paid for merchandise in stock and quotations received from various houses on different articles. One card gives all this information; on one side of it quotations are entered; on the other purchases are recorded. On the quotation side the price quoted on a certain article is listed together with the date of the quotation and the name of the party quoting. Terms and prices are extended. On the purchases side of this card space is provided for


ARTICLE _____

RECEIVED						SOLD								
DATE	FROM	LOT NO.	RCVG NO.	QTY.	PRICE	DATE	CHGE. NO.	QTY.	DATE	CHGE. NO.	QTY.	DATE	CHGE. NO.	QTY.

RECEIVING RECORD


KING TIRE CO.
1985-7 BROADWAY, NEW YORK

CLAIM NO. 250
191

M _____

Dear Sir:

You are hereby requested to pass credit to our account for $ _____ for the reasons stated below.

Yours very truly,
KING TIRE CO.,
By _____

SHORTAGE OR OVERCHARGE

INVOICE DATE	DATE RECV'D	RECV'R NO.	ARTICLES BILLED	QUANTITIES BILLED	QUANTITIES REC'D	QUANTITIES SHORT	PRICE BILLED	CORRECT PRICE	AM'T OF SHORT	CLAIM OVERCH'GE

TOTAL CLAIM

IF CLAIM IS FOR OTHER CAUSE THAN SHORTAGE OR OVERCHARGE, STATE REASONS BELOW

CLAIM SHEET

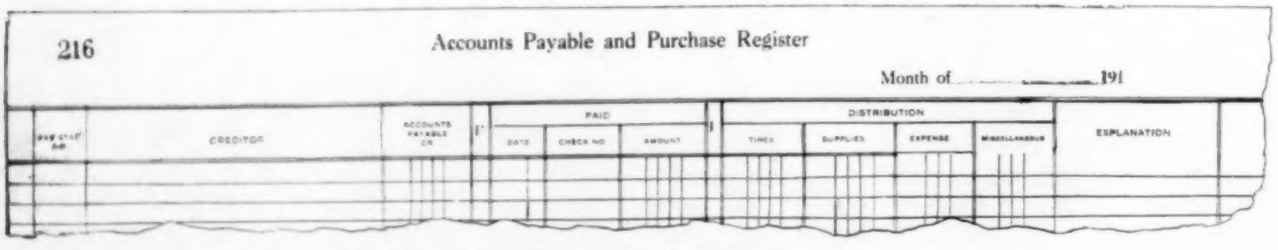
records of purchases. Current prices are also entered. This card makes it an easy matter to check prices on invoices received.

Method of Recording Stock

From this card a loose-leaf stock book is posted. The pages of this book are laid out for recording receipts and sales; they show prices paid and prices received for all goods handled and at any time it is an easy matter to accurately determine the total amount of any article on hand.

Method of Recording Sales

Orders when received for shipments are entered in quadruplicate form, the original of which goes to customer as an invoice, the second is retained as a ledger charge for posting, the third goes with the shipping order, and the fourth remains with the accounting department to record sales to be entered in stock register. Space is provided on this copy for costs of charges and sales entered thereon. The amount of this sale or


216 Accounts Payable and Purchase Register

Month of _____ 191

PAY STMT NO.	CREDITOR	ACCOUNTS PAYABLE CR.	P	PAID DATE	PAID CHECK NO.	PAID AMOUNT	DISTRIBUTION TIRES	DISTRIBUTION SUPPLIES	DISTRIBUTION EXPENSE	DISTRIBUTION MISCELLANEOUS	EXPLANATION

ACCOUNTS PAYABLE AND PURCHASE LEDGER

Article PURCHASES Size or No.

Date	Quoted by	FROM	Quantity	Unit	List	Discount	Net	Terms	Freight	Net Cost Del'd

Article QUOTATIONS Size or No.

Date	Quoted by	FROM	Quantity	Unit	List	Discount	Net	Terms	Freight	Net Cost Del'd

QUOTATION AND PURCHASE RECORD CARD—FRONT AND BACK

charge is transferred following its serial number to a book called sales register. Simultaneously the cost is also posted. Cash sales also come into this register.

SIZE_____

	TIRE NO.	FROM	RECVG. NO.	MAKE	KIND	TREAD	SERIAL	DATE	CUSTOMER	CHARGE NO.

STOCK BOOK

Cash Sales

Cash sales are made out in triplicate form, the original goes to the purchaser, the duplicate is sent to the cashier and the triplicate is kept for record by the salesman.

The sales register shows both cash sales and charges; the amounts of both as to tires and accessories, the cost of sales on tires and supplies, credit to salesmen, and credit to purchasers.

Accounting with Branches

When goods are shipped to our branches, they are billed at cost prices and are treated in the same manner as all receivable accounts except that the branches are credited for their purchases and at the end of each month the sales credited to the branches must equal the amount posted to their account in the receivable ledger.

The charges to the branches in the register are deducted from total sales so as to enable us to determine the net charges of customers for a specified period of time. This same procedure of recording sales is applied to merchandise received on account of tires and supplies returned.

At the close of the month's business this register discloses the following information: total amount of sales including cash sales dissected as to tires and supplies, the cost of sales on tires and supplies, the cost of cash sales on tires and supplies, the total sales to our branches and the total business credited to salesmen's accounts. The regular method of recording these transactions to the controlling accounts is followed.

ACCESSORIES
APPAREL

The King Tire Co.

1985-7 BROADWAY, NEW YORK

TIRES AND TUBES
OILS AND GREASES

INVOICE № 7151

SALESMAN	SOLD TO	DATE
CUSTOMERS NO.	ADDRESS	C. O. D.
SHIPPED		CHARGE
CHECKED BY	VIA	TERMS

BACK ORDER	CAT'G NO.	QUANTITY	DESCRIPTION	PRICE	AMOUNT TIRES	AMOUNT SUPPLIES

Goods returned for credit are subject to a 10% Handling Charge
All claims for shortage must be made within three days after receipt of goods

INVOICE IS MADE IN QUADRUPLICATE

Our branches employ a regular double entry system of bookkeeping and submit to us a daily report of the day's transactions. The report consists of two sheets, 12 x 9½ in. On the debit side of the first sheet at the top appears the balance in the bank from previous day. The second line is for cash received from cash sales, and the third line, for receipts on account. Space is also provided for discounts allowed to customers. On the credit side of the first sheet, checks drawn by the branch are listed and subsequently the balance between both sides is the debit balance for the day in bank.

The second sheet is divided into two parts in respect to cash and charge sales. Each one of these sales is arranged numerically. When these reports arrive they are immediately recorded in our cash book which provides space for all the branches on both receivable and payable sides. The cash and disbursement receipts are recorded in their respective places in the cash book.

Toward the end of the month the branches submit to us a trial balance of both receivable and payable ledgers as the same must agree with the trial balance drawn off by us from all reports submitted.

SALES REGISTER 335

Month of_____191

	TICKET NO.		AMOUNT	CASH SALES		CHARGE SALES		COST OF SALES		CREDIT TO PURCHASES				SALESMEN			
	CASH	CHARGE		TIRES	SUPPLIES	TIRES	SUPPLIES	TIRES	SUPPLIES	BROOKLYN	WHITE PLAINS	NORTH	BRONX				

SALES REGISTER

The Application of Volume Cost to the Rubber Sole Industry

By C. S. Redfield

Among rubber sole manufacturers it seems to be the general practice to find the cost and weight of a new sole compound by mixing the compound, then vulcanizing a pair of soles from this compound, and weighing them. Below, I endeavor to point out a method of arriving at the cost and weight of such soles without mixing the compound.

The significance of volume cost is that the weight of the stock and the cost per pound are combined in one term, and compounds and costs are thereby placed on a comparative basis. In American practice this is usually expressed as the cost per cubic foot.

Thus, two sole compounds both costing 16½ cents per pound are not comparable, because a pair of soles made from one compound may weigh 4 ounces more than the other. However, two sole compounds costing $18.88 per cubic foot are comparable, since, in this case, the weights are taken into account.

The shape and sizes of the different styles of soles of the various manufacturers vary considerably, size for size, so that it will be necessary for each manufacturer to determine for himself the number of pairs per cubic foot of his particular styles.

Finding the "Pairs Per Cubic Foot"

In molding soles there is considerable difference in the weight per pair due to the amount of flow on the sole back which, in turn, is due to the amount of stock placed in the mold or variation in the hydraulic pressure on the press.

In view of this variation it will be necessary to weigh at least ten pairs of soles of each size and style. So pick out ten pairs of soles of each size and style and weigh them in ounces and hundredths of an ounce; take the average of the ten pairs as the weight per pair of that size. This is shown in Table I (for one particular make of sole) which is for men's red ¼ in. thin heel soles, the weights on which were as follows.

TABLE I

WEIGHT IN OUNCES PER PAIR OF MEN'S ¼-IN. THIN HEEL RED SOLES. SPECIFIC GRAVITY 1.57.

Size.	1	2	3	4	5	6	7	8	9	10	Average
7	11.77	11.68	11.83	11.92	11.75	11.78	11.82	11.73	11.81	11.79	11.718
8	13.62	13.83	13.51	13.76	13.58	13.65	13.72	13.49	13.71	13.64	13.651
9	15.42	15.75	15.29	15.65	15.38	15.73	15.65	15.48	15.53	15.67	15.555
10	17.25	17.38	17.20	17.43	17.53	17.18	17.27	17.31	17.29	17.32	17.316
11	19.09	19.23	19.17	19.19	19.25	19.03	19.21	19.14	19.16	19.13	19.160
12	20.89	20.75	20.93	20.72	20.85	20.82	20.75	20.91	20.85	20.90	20.837

Size 7—11.718 ounces per pair.
Size 8—13.651 " " "
Size 9—15.555 " " "
Size 10—17.316 " " "
Size 11—19.160 " " "
Size 12—20.837 " " "

The next operation consists in taking the specific gravity of the stock from which the soles, which were weighed, were made. In the case of the soles weighed in Table I the specific gravity was 1.57.

Take the specific gravity found and move the decimal point three places to the right, which then gives the number of ounces in a cubic foot of stock of that specific gravity thus:

Specific Gravity.	Ounces Per Cu. Ft.
1.32	1320
1.57	1570
1.76	1760

Having found the ounces per cubic foot, as shown above, divide this by the average weight of the various sizes and you have the pairs per cubic foot. This is worked out in Table II, thus:

TABLE II

PAIRS PER CUBIC FOOT

Size.	Pairs Per Cu. Ft.
7	133.9
8	115.0
9	100.9
10	90.6
11	81.8
12	75.3

Remembering that the stock from which these soles (weighed in Table I) were made had a specific gravity of 1.57, there would be 1570 ounces in a cubic foot of this stock, therefore:

$$\frac{\text{Ounces per cubic foot}}{\text{Weight per pair in ounces per cubic foot,}} = \text{Pairs}$$

or $\frac{1570}{11.718} = 133.9$ pairs per cu. ft. for size 7.

Likewise, $\frac{1570}{13.651} = 115.0$ pairs per cu. ft. for size 8.

and so on.

Weight and Cost Per Cubic Foot

Pounds per Cubic Foot.—Multiply the specific gravity by 62.5.

A compound with a specific gravity of 1.20 would weigh $62.5 \times 1.20 = 75$ lb. per cu. ft.

Cost per Cubic Foot.—Multiply the cost per pound by the pounds per cubic foot.

If the above compound cost 35c. per lb. the cost per cu. ft. $= 75 \times .35 = \$26.25$, or

Cost per cubic foot = 62.5 × specific gravity × cost per lb.

Finding the Specific Gravity of a Compound Without Mixing It

Divide the weight of the batch by the sum of the quotients obtained by dividing each component by its specific gravity, giving you the specific gravity of the mix, thus:

Lbs.	*Material.*	*Sp. Gr.*	*Wt. / Sp. Gr.*	*Quotient.*
40	Ceylon	.92	40 / .92	43.47
10	Tube Reclaimed.	1.09	10 / 1.09	9.17
6	Magnesia Carbonate....	3.00	6 / 3	2.00
8	Sulphur	2.00	8 / 2	4.00
4	Red Oxide	5.24	4 / 5.24	.76
20	Ground Duck...	1.60	20 / 1.60	1.25
88				60.65

Specific gravity of mix $= \frac{88}{60.65} = 1.45.$

As practical applications of the foregoing, the following examples are cited:

Example I.—What would be the weight of 25,000 pairs of soles, size 8—Table I—made from the following composition:

30	Ceylon Pale Crepe.....	30 / .92	32.60
6	Pontianak	6 / 1.05	5.72
24	Ground Cotton Fiber...	24 / 1.50	16.00
15	Zinc Oxide	15 / 5.6	2.58
3	Sulphur	3 / 2	1.50
6	Magnesia	6 / 3.17	1.89
84			60.29

Calculate the specific gravity as shown above and the result is $\frac{84}{60.29} = 1.39$.

The ounces per cu. ft. would be 1390.

From Table II there are 115 pairs per cu. ft., size 8. Therefore the weight per pair is $\frac{1390}{115} = 12.08$ ounces. $12.08 \times 25{,}000 = 302{,}000$ ounces or 18,875 lb., the weight of 25,000 pairs.

Example II.—What would be the difference in cost for stock per pair of soles, size 9—Table II—made from the two compositions below?

A		*B*	
24	Ceylon	6	Ceylon Crepe
12	Litharge	4	Corn Oil Substitute
37	Whiting	26	Tire Reclaimed
1	Sulphur	10	Ground Black
4	Tar	26	Whiting
16	Shoe Recld.	1½	Lime
—		1	Vaseline
94		1¼	Sulphur

Calculating the specific gravity as shown above, we find that for *A* it is 1.71, and for *B* it is 1.63.

Figuring the cost per pound, we determine that for *A* it is $.1957, and for *B* it is $.143.

Calculating the cost per cubic foot, we find that for *A* it is

$62.5 \times 1.71 \times .1957 = \$20.9144$,

and for *B* it is

$62.5 \times 1.63 \times .143 = \$14.5681$

From Table II there are 100.9 pairs of soles per cu. ft. Therefore we figure

$$A = \frac{\$20.9144}{100.9} = \$.2072 \text{ per pair.}$$

$$B = \frac{\$14.5681}{100.9} = \$.1443 \text{ per pair.}$$

Stock *B* is $.0629 per pair cheaper.

Example III.—Which is cheaper and how much per pair of soles, size 8—Table I—made from a stock with a specific gravity of 1.63 and costing 15 cents per pound or made from a stock with a specific gravity of 1.22 costing 20 cents per pound?

Solution:

$1.63 \times 62.5 \times \$.15 = \$15.2812$ cost per cu. ft.

$1.22 \times 62.5 \times \$.20 = \$15.2500$ cost per cu. ft.

From Table II there are 115 pairs per cubic foot.

$$\text{Therefore } \frac{\$15.2812}{115} = \$.1328$$

$$\frac{\$15.2500}{115} = \$.1326$$

$\$.0002$ Difference in cost per pair.

Here we see that the compound with the higher cost per pound is cheaper, which shows that one can produce a sole of better quality and less expense to ship although the cost per pound is higher.

Example IV.—What would be the difference in cost per pair for stock, of size 8 and size 12—Table I—the stock having a specific gravity of 1.45 and costing 18c. per pound?

Solution:

$1.45 \times 62.5 \times .18 = \$16.313$ per cu. ft.

From Table II:

Size 8 = 115 pairs per cu. ft.

Size 12 = 75.3 pairs per cu. ft.

Therefore,

$\frac{\$16.313}{75.3} = \$.2166$ per pair of size 12.

$\frac{\$16.313}{115} = \$.1418$ per pair of size 8.

$\$.0748$, difference.

Size 12 costs $.0748 per pair more than size 8.

Example V.—What would a pair of size 12—Table I—soles weigh, made from the following compound?

Lbs.		*Wt. / Sp. Gr.*	*Quotient*
20	Ceylon	20 / .92	21.77
5	Pontianak	5 / 1.05	4.76
6½	Corn Starch	6.5 / 1.53	4.25
20	Lithapore	20 / 3.80	5.27
23	Whiting	23 / 2.72	8.46
10	Zinc	10 / 5.6	1.78
2½	Lime	2.5 / 2.41	1.04
3	Sulphur	3 / 2	1.50
1	Paraffin	1 / .875	1.14
91			49.97

$$\text{Specific gravity} = \frac{91}{49.97} = 1.82.$$

Therefore, 1820 ounces is the weight per cubic foot. There are 75.3 pairs per cubic foot (from Table II). Therefore $\frac{1820}{75.3} = 24.2$ ounces per pair.

Antimony Sulphuret: Its Place in Tube Making

By Van Lear Woodward

of Frazar & Co.

To the rubber manufacturers the use of antimony sulphuret, or sulphide, as a compounding ingredient is becoming of increasing interest.

Antimony sulphuret is a chemical salt, produced by various methods, principally from stibnite ore, or needle antimony, which is found in certain of the Chinese provinces, in parts of South and Central America, and in the western districts of the United States.

Its use as a coloring agent is of long standing, for it is frequently mentioned in the Scriptures as having been used to color the beards,—thus preventing Father Time from showing his effect.

As a rubber pigment, however, it was first brought into use in England in 1852, by William Forster, then chemist at his father's rubber factory, in Streatham Common, London. At his father's death, Mr. Forster decided that the production of this commodity was of more interest than continuing the production of rubber articles, and shortly after that the firm of Forster & Gregory was founded, which is still in existence, though Mr. Forster within the last few years has retired from the business

Antimony sulphuret was then, and has been up to recent years, primarily used to impart its colors to rubber articles, druggist sundries, toys, etc., for it produces a clear brilliancy unobtainable from any other low-priced red pigment.

It was soon discovered, however, that it was an excellent sulphur carrier; the process of manufacture being then changed so that the finished product contained approximately 16 per cent of free sulphur, and it is this product that is now in general use by the trade, though there are, of course, some who prefer to buy antimony that is sulphur free, adding their own sulphur.

As the sulphur contained is in a colloidal state, a cure can be effected when using this quality of antimony with about one-half of the percentage of free sulphur that would be otherwise required, e.g., a pure gum stock, to be cured for two hours at 45 pounds would require 7 per cent sulphur; whereas, a pure gum red stock, consisting of 78 parts of rubber and 22 parts of antimony sulphuret could be cured equally as well at the same time and pressure.

Thus, with the antimony containing 16 per cent free sulphur, you have in your compound a total of 3½ parts of sulphur, or exactly one-half of what you had in the pure gum gray stock; and this is of utmost importance to the rubber manufacturer, for it is well recognized that an excess of free sulphur in the vulcanized product is a deteriorating agent.

Large Field

By far the largest field for development in the use of antimony is in the manufacture of inner tubes, for the public has for years preferred a red tube, probably for reasons unknown; yet, a consumer once purchasing a red tube seldom reverts to the grays, regardless of the latter's lower cost. It must be admitted, however, that a large percentage of tube consumers are influenced by price; hence, as long as red tubes command the higher selling price, the gray tubes will be generally produced.

Careful distinction must be made between the antimony red tube and tubes which have been given a red color by the use of iron oxide; the latter being a dangerous ingredient unless handled with the greatest of care. The particular advantages of using antimony as a compound ingredient may be summarized briefly as follows:

(1) The elimination of excess sulphur with its deleterious effect.

(2) Increased resistance to heat, such as generated during service on the road.

(3) Increased aging properties; preventing cracking and drying up while lying on the jobber's shelf.

A properly cured antimony tube is absolutely free from bloom, showing that practically all the sulphur present is in the combined state, and it will retain its resiliency and velvety appearance long after what would be considered by the average user, yeoman's service. Furthermore, it will not crack or dry up while lying on the jobber's shelf, which is unquestionably the cause of the larger portion of tube returns. Both its aging and heat resisting properties are due primarily to the fact that perfect vulcanization is effected with one-half the sulphur otherwise required.

An antimony compound is, therefore, more "fool-proof." It is less apt to go wrong because the danger of excess free sulphur in the vulcanized product is eliminated and it is a well-established fact that such excess free sulphur is the cause of undue heating and poor aging qualities.

The complaint most generally heard from the users of the gray tube is that, when a puncture occurs, the pressure of air released splits the tube, frequently to the extent of making repair impossible.

On the other hand, if you will take a section of antimony red tubing, properly compounded with one of the established grades of sulphuret, say, 2 in. long, and fold in half lengthwise, snipping off one of the doubled corners, inserting in the round hole thus produced the first two fingers of each hand, you will find that, pull as you may, you cannot even start a rip.

This test illustrates the effect of a puncture, or blowout on an antimony red tube, which, in the majority of cases, will merely open a small hole allowing the air to escape, leaving the tube in such a condition that it can be easily repaired.

Sulphuret is now obtainable from several sources on a cost basis that not only permits an antimony red tube to be made at a price approximating that of the pure gum gray; but also, due largely to the remarkably low specific gravity of a 20 per cent antimony compound, an antimony red tube can be made as cheaply as any other high grade tube we know of.

In view of the above, we have felt that if the rubber manufacturer were in position to purchase sulphuret on a basis enabling him to make antimony red tubes at the approximate cost of pure gum grays, slowly perhaps, yet surely, the latter would be eliminated from the market.

Power Losses in Pneumatic Tires*

By E. H. Lockwood

Assistant Professor of Mechanical Engineering, Sheffield Scientific School, Yale University

An apparatus for power measurement at the rear tires of an automobile was installed in 1913 at the mechanical laboratory of the Sheffield Scientific School. A description of this apparatus, with an outline of a proposed method of rear-wheel testing, was presented in January, 1915, at the annual meeting of the Society.†

During the summer of 1916 a calibrated motor was attached to the drums for the purpose of measuring the internal friction losses of tires and transmissions system when driven by an external source. This addition to the apparatus led to a revision of the method of testing and the form of report, all aimed to give greater completeness and accuracy.

Considerable attention was paid to measurement of the internal friction losses, and many experiments were made on a six-cylinder chassis (this was a 6-30 Chalmers lent by the Chalmers Motor Co.) of recent design. In connection with the work a series of tests was made on various elements that might affect car internal resistances, such as speed of car, inflation pressure in tires, load on the axle, and material or construction of the tires.

The information derived from these tests has proved so interesting that the principal results are now presented for discussion. The experiments have the limitation of being made on one size of tire only, and no claim is made that the entire question of tire resistance has been solved.

The method of obtaining the rolling resistance was to anchor the car with either pair of wheels on the center of the test drums, and then to rotate the latter by means of the calibrated motor. Two readings were needed, one with the car on the drums and one with the car removed, when the difference in power measured the rolling resistance of a pair of wheels. It has been found possible to avoid calibration errors in this operation by the use of the absorption dynamometer on the drum shaft, adding enough resistance by the latter so that all meter readings are duplicated when the wheels are removed. The dynamometer then measures the equivalent of the rolling resistance of the wheels. The available range of speed of the motor is from 40 to 20 m.p.h. at the circumference of the drums, and its maximum power is 15 hp. The diameter of the drums is such that 300 rev. are equal to one mile.

TABLE I—ROLLING RESISTANCE OF FRONT WHEELS

Car No.	Tires	Inflation Pressure, Lb.	Load, Lb.	Speed M.p.h.	Rolling Resistance, Lb.
1	32x4 Silvertown Cord	60	1120	20	11.7
				30	11.7
				40	13.8
				Aver.	12.4
2	32x4 Plain Fabric	55	1145	21	24.1
				27	25.0
				34	23.5
				41	24.4
				Aver.	24.25
3	35x5 Silvertown Cord	60	2100	21	33.0
				27	33.6
				34	34.2
				41	33.8
				Aver.	33.65

* Paper presented before the Philadelphia Section of the Society of Automobile Engineers.

† The Practical Testing of Motor Vehicles, A. B. Browne and E. H. Lockwood. S. A. E. TRANSACTIONS, Part I, 1915, p. 68.

Quite sensitive readings can be made in this way, enabling small variations in rolling resistance to be measured. One possible criticism of its accuracy is that the drum friction is increased when the weight of the wheels is added to that of the drums. Careful measurement of the drum friction when running idle showed an effort of 4 lb. at the drum circumference at 20 m.p.h. and 6 lb. at 40 m.p.h. The drums weigh about 3,000 lb.; the load on an average pair of wheels is about 1,500 lb. It is certain the friction does not increase in proportion to the weight on the drum bearings, and the assumption that the drum friction is constant at different loads cannot involve much error.

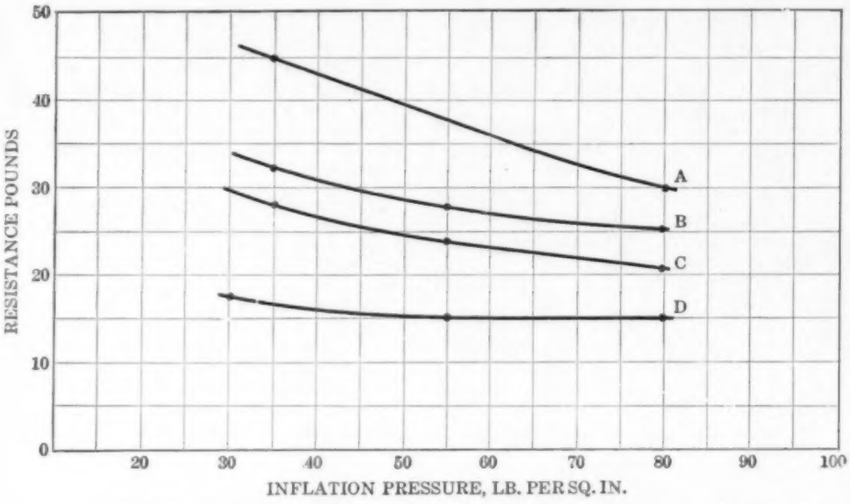


FIG. 1—ROLLING RESISTANCE MEASURED AT CIRCUMFERENCE OF 32 BY 4-IN. TIRES
A—Rear Wheels Fabric Tires. Load 772 Lb. per Wheel.
B—Rear Wheels Fabric Tires. Load 550 Lb. per Wheel.
C—Front Wheels; Fabric Tires. Load 570 Lb. per Wheel.
D—Front Wheels; Silvertown Cord Tires. Load 570 Lb. per Wheel.

Rolling Resistance at Various Speeds

One suprising result of all measurements of rolling resistance at speeds from 20 to 40 m.p.h. has been the slight increase of resistance at the higher speed. With some cars the increase of resistance is less than the observation errors. In other cases the increase amounts to from 5 to 10 per cent.

In reporting values of rolling resistance, the observations have been made at either three or four speeds covering the entire range, finally using the average of all the readings.

The results in Table I are given as an example of the amount of variation of resistance of speed. The readings are reported exactly as recorded. These cars differed considerably in rolling resistance, but in every case the speed of the car had little or no effect on the result. Rear-wheel tests were made confirming the results obtained with the front wheels; hence the conclusion from these tests that the internal rolling resistance of an automobile is practically constant at all speeds up to 40 m.p.h.

Distribution of Power Losses

The measurements described give as a result, the total rolling resistance of the front tire and bearings, or of the rear tires and all transmission losses up to neutral gear.

By an independent measurement the tire loss can be separated from the bearing and transmission loss. This is accomplished by jacking up the wheel until the contact between the surface of the tire and the drum is just sufficient to revolve the wheel. In this way tire resistance is practically eliminated, leaving only resistance due to bearings and transmission.

The internal power losses of the six-cylinder Chalmers chassis were determined in this way. The tires were 32 by 4-in.; load on front wheels, 1,145 lb., load on rear 1,545 lb.; tire inflation 75 lb.

The rolling resistance follows:

	Lb.	Per Cent
Front tires only	18.2	31.2
Rear tires only	17.7	30.3
Front bearings only	4.7	8.0
Rear bearings and transmission	17.9	30.6
Total	58.5	100.

Dividing the four items mentioned into groups, we find that the tires alone are responsible for 61 per cent of the total resistance, while the axle bearings and transmission up to neutral consume only 39 per cent. The conclusion is that the tires are responsible for nearly two-thirds of the power lost in the car itself.

The values cited are averages for speeds from 20 to 40 m.p.h., and as stated previously, the resistance changed little with the speed.

Tire Resistance and Production of Heat

The discovery that 61 per cent of the internal loss of this car is expended in the tires, leads naturally to the question: What becomes of this power?

It is probable that friction of the material within the tire structure is continuously taking place, owing to flexure at the contact with the road. This absorption of work and production of heat is similar to the condition in a friction brake, except that the friction is produced by bending and not by sliding the fabric.

If these assumptions are true, it ought to be possible to calculate from the work absorbed the amount of heat generated; also to calculate the temperature of the tire surface when it reaches thermal equilibrium. The solution of this problem is worked out like that of a hot-water radiator, or, rather, as the wheel is revolving, like that of a hot blast heater.

These tires have 5.83 sq. ft. of surface, and the resistance at the circumference is 8.85 lb. At a speed of 30 m.p.h., 1,810 B. t. u. per hour will be generated. In order to dissipate this heat in the air an increase of temperature of 39 deg. F. above that of the room will be required; this result is based on a heat transfer coefficient of 8 B. t. u. per deg. per hr.

This calculation was made in advance of any experiments, but was later verified by running one of the 32 by 4 in. tires for half an hour at 30 m.p.h., after which the car was stopped and the surface temperature taken with a mercurial thermometer. The room temperature was 70 deg. F. and the tire temperature was 107.5 deg., or a rise of 37.5 deg. as compared with the calculated rise of 39 deg.

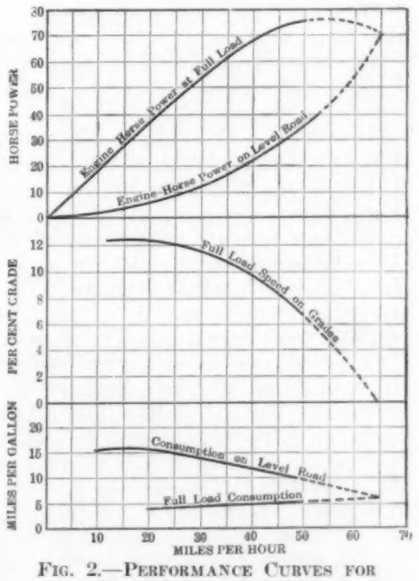


FIG. 2.—PERFORMANCE CURVES FOR TWELVE-CYLINDER CAR

This experiment confirms the

theory that tire resistance is caused by flexure of the material, and leads logically to the conclusion that resistance will be increased by under-inflation and by over-loading.

Inflation Pressure and Load

Of the factors affecting rolling resistance, inflation pressure is perhaps the most important. A considerable change of resistance can be caused by a moderate change of pressure.

The load carried by the tire is also an important factor, and must be considered along with the inflation. It seems probable that for a given load there is a region of inflation below which the resistance increases rapidly.

This relationship can best be shown by a series of characteristic curves, in which rolling resistance is plotted against inflation for a number of loads. Fig 1 shows an incomplete series of such characteristic curves for 32 by 4 in. tires.

The influence of inflation pressure is clearly shown in curve *A*, which represents the rolling resistance under normal load of rear wheels equipped with fabric tires. With reduction of inflation pressure from 80 to 30 lb. the rolling resistance increases from 30 to 45 lb.

When the load on the wheel was reduced the rolling resistance decreased from 30 to 25 lb. under high inflation pressure. Reduction of pressure caused an increase of resistance in this case but not quite so pronounced as in the first curve. Curve *B* shows the rear-wheel resistance under light load.

Curve *C* shows the resistance of the front wheels under load equal to that on the rear, and displays the same characteristics as curve *B*. The uniformly greater resistance of curve *B* is due to the transmission system being connected with the rear wheels.

An approximate calculation of the increase of power caused by under-inflation can be made from the above experiments. From Fig. 1, the total rolling resistance at 80-lb. pressure, front and rear wheels combined, is 51.9 lb., while the corresponding value at 30-lb. inflation is 72.5 lb. Adding to these values the wind resistance calculated for 25 m.p.h. (30 lb.) the total car resistance for the two cases is found to be 81.9 and 102.5 lb. The conclusion is that an increase of power amounting to 25 per cent can be caused by very much under-inflated tires.

Cord Versus Fabric Tires

Only a limited number of tests of cord tires have been made under conditions permitting accurate comparison with fabric tires.

One such comparison is shown by curve *D*, Fig. 1, where a cord tire, 32 by 4 in., was tested under exactly the same conditions on the front wheels for the whole range of pressures.

The characteristics of this cord tire are: Greatly reduced resistance loss and ability to run at low inflation without much increase of resistance.

While these experiments point to the value of cord tires for reducing tire losses, more numerous and exhaustive tests are required covering a wider scope.

Performance Test of Twelve-Cylinder Car

The results of a performance test made of a Packard 2-25 five-passenger phaeton are shown in Fig. 2. These tests were made by use of the apparatus previously described in this paper. The car without passengers weighed 4,460 lb., of which 2,100 lb. was on the front wheels. The engine was of the twelve-cylinder V-type with 3-in. bore and 5-in. stroke, the piston displacement being 424 cu. in. The gear ratios were as follows: First (low) 14.89:1; second, 7.24:1; and third 4.37:1. Both front and rear tires were 35 by 5 in. Front tires were inflated to a pressure of 60 lb., and the rear to 65 lb. The projected area of the car body at the front was 24.5 sq. ft. The results of the performance tests follow:

Car Resistance					
Test speed of car, m.p.h.	10	20	30	40	50
engine, r.p.m.	420	840	1260	1680	2100
Rolling resistance, front wheels, lb.	32.5	33.0	33.5	34.0	34.5
rear wheels and transmission, lb.	49	50	51	52	53
total, lb.	81.5	83	84.5	86	87.5
Wind resistance, calculated, lb.	7.35	29.4	66.1	117.5	183.6
Traction and Grade					
Tractive pull on drums, level road, lb.	40	62.4	99.6	151.3	218.1
max. in high gear, lb.	...	620	620	600	520
Steepest grade in high gear, per cent.	...	12.1	11.3	9.75	6.5
Horsepower					
Horsepower at rear tires, level road	1.2	3.6	8.1	16.0	29.0
full load	...	35.0	50.0	63.5	69.5
of rear wheels and transmission	1.30	2.7	4.1	5.5	7.1
of engine, level road	2.5	6.3	12.2	21.5	36.1
full load	...	37.7	54.1	69.0	76.6
Fuel Economy					
Fuel used per hour, level road gal.	0.66	1.35	2.08	3.38	5.25
full load	...	5.0	6.7	8.0	8.8
Miles per gallon, level road, high gear	15.1	14.8	14.4	11.8	9.5
full load high gear	...	4.0	4.5	5.0	5.7
Fuel, pounds per hour per engine hp.—level	1.59	1.29	1.02	0.94	0.87
full load	...	0.80	0.74	0.70	0.69

In the discussion that followed the reading of this paper, Professor Lockwood said in part:

The rubber in tires differs in quality, as shown by a fine rubber dust thrown off from the drums when making a power test. Some tires yield a quantity of this pulverized rubber which is found scattered on the floor; others show no signs of this although transmitting the same amount of power.

Slippage undoubtedly exists between the tire and the face of the drums, as shown in the tendency to grind off the rubber surface, but the amount of slippage is in my opinion very small.

Source of Heat in Tires

I think that most people would question my original statement about the source of heat. It was originally my impression that the heating of the tires was caused by the tendency to slip on the road. I feel sure now that it is caused almost wholly by the flexure of the material and is not due to any slippage. Just the same amount of heat was in evidence when we revolved the front tires as the rear ones. The tire manufacturer apparently has a problem on his hands, namely, to build up the cords and rubber in such a way that this injurious friction action will be absent. Nobody expects a spring to heat up; the valve springs, for instance, never do. But the rubber tires, being bent around, do heat up. I think it is quite possible to combine the rubber and the fabric in such a manner that they will act similarly to a steel spring—bend and come back without absorbing energy.

Inflation Pressure on Fuel Consumption

In beginning power measurements at the rear tires, it was discovered that the inflation pressure produced a noticeable effect on the fuel consumption of the engine. This led to making all tests at uniform inflation pressure, and finally to measurement of the difference in power loss due to various inflations, and loads.

Inflation Pressure and Temperature

If the heat is given out by the flexure of the rubber it goes more or less into the rim, the metal parts and the rubber casing. I assume that the rubber would be a better conductor of heat than the wood and that the heat would be all diffused. I presume that the rim would dissipate some of the heat too.

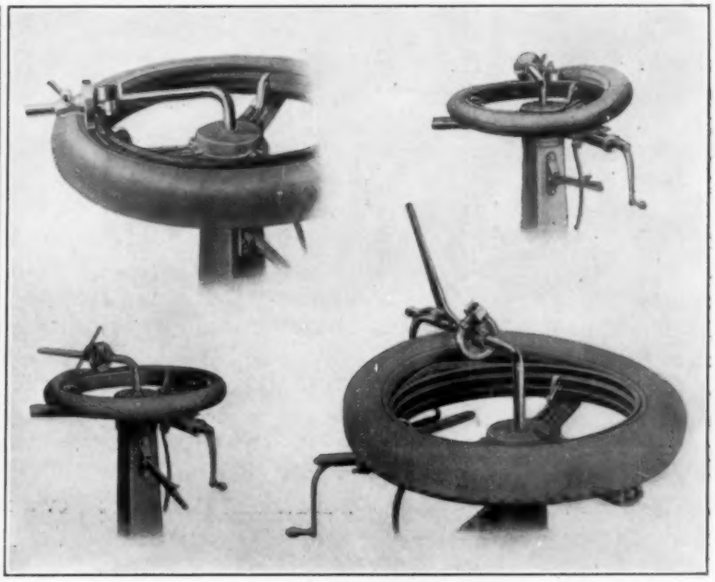
We measured the temperature by placing the thermometer bulb on the tire, protecting it by a piece of waste. The rubber was apparently of uniform temperature at the surface, and retained its heat for some time after running. The inflation pressure of the two tires differed by 6 lb., one being our standard pressure, and the other lower. The surface temperature of the two tires differed by one and one-half degrees, the one with lower inflation being hotter. This difference confirms the theory that the effect of lower inflation is greater production of heat. I have reported this experiment as helping to explain the cause of tire resistance, and I believe the observations are substantially correct even if made with simple appliances.

I should say that the best power efficiency is obtained by running the cars with the tires very hard; let the tires stay hard and get the comfort in some other way.

The Weaver Universal Tire Changer

" Time is money," and both are often lost in making tire changes. One difficult tire will frequently require an hour or more labor of two men and thus consume the profits on a dozen normal changes where this service is charged for at a set price " per change."

Where tires are changed gratis as a feature of " service " to customers, there is all the more reason to perform the work with the least possible waste of time and labor. The Universal tire changer, made by the Weaver Mfg. Co., Springfield, Ill., has been placed on the market to meet the demand for a device to facilitate this frequently tedious work.



The general principle of operation is apparent in the accompanying illustrations. The horizontal arm bearing the rollers and other attachments is revolved by hand to carry the application of these rollers and other attachments around the entire circumference of the tire. Thus, one revolution of the arm accomplishes in minutes what would in many instances require a long time to perform with the ordinary improvised methods.

The horizontal arm is raised or lowered by means of the hand lever mounted on the pedestal base so that the pressure of the appliances can be delivered as required. The sliding sleeve carrying the rollers and other attachments is held in proper position by a simple tail nut.

The crank handle expands or contracts the jaws of the machine for " chucking " the rim to hold it securely in position. These " jaws " are also a convenience for expanding split rims so as to facilitate latching after the tire is mounted on rim.

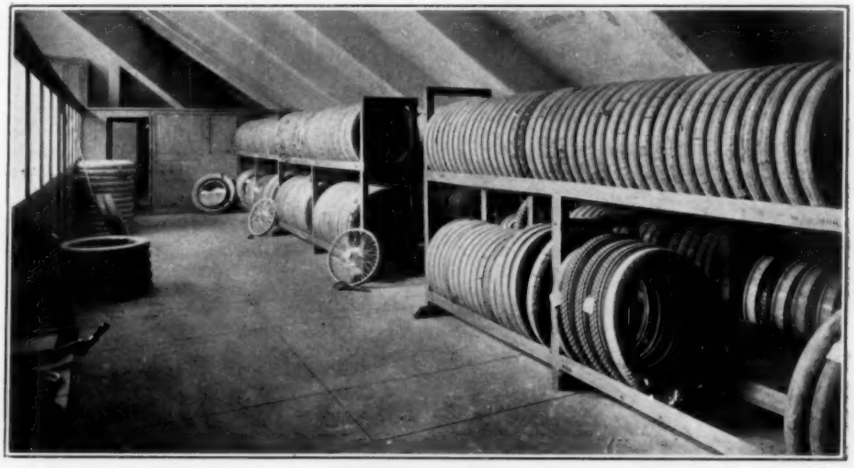
To remove a straight side or a clincher tire from a quick detachable rim, the lock ring and adapter ring are removed after they have been freed from the rim by means of the large roller. If the tire is rusty and sticks to the rim, the goose-neck attachment is used in the position shown in one of the illustrations.

When the goose-neck is properly adjusted, it is forced upward as far as possible by means of its toggle lever. The horizontal arm is then rotated a few inches forward and the toggle lever forced upward again. This operation is repeated until the under bead of the tire is brought over the upper edge of the rim so that the tire may be lifted off

To remove a tire from a split rim, the hooks on the jaws are thrown over the upper edge of the rim, the toggle lever on the jaw on the crank arm being thrown forward. The crank lever is then turned backwards so as to contract the jaws until the hooks engage the rim securely. The toggle lever is then thrown back until it locks securely. This separates and contracts the rim and releases the tire so that it may be readily lifted off by hand.

The work of mounting a tire is simple and speedy. With the rim locked on the machine, the large roller is set so that its inner edge is flush with the outside of the rim, while the small roller guides on the rim. The bead of the tire is forced down into place by means of the hand lever and the attachment-bearing arm is revolved clockwise, forcing the tire onto the rim. The tire adapter ring and lock ring are then placed in the proper position and the large force roller is used to roll them into place.

An Orderly Tire Stock Room



President
Lester D. Gardner

THE RUBBER AGE

Editor
Herbert M. Williams

Vol. I | April 25, 1917 | No. 3

THERE is sufficient crude rubber in the country to meet the immediate requirements of American manufacturers, but no large reserve exists such as would be needed in case of an interruption in arrivals. Stocks in London are larger than usual, probably due to the fact that Great Britain is guarding her manufacturers and those of her Allies against possible shortage.

It has been stated that there was a tendency to curtail shipping permits for rubber from the East direct to American ports, but that since America's entrance into the war a more liberal disposition is being shown in this respect. Whatever the truth may be in this matter, it is a fact that there has been no reduction in American crude rubber imports, for during the first three months of 1917 these imports were considerably greater than for the corresponding period of last year.

Figures furnished by the Rubber Association of America show that in January, 1917, 12,788 tons of crude rubber arrived in this country, compared with 9,162 tons for the same month of 1916. In February, 1917, 10,162 tons came, against 9,597 tons for the corresponding month of the previous year; and in March, 1917, 18,624 tons were imported, against 10,070 tons in March, 1916.

No suggestion has been made as to what April figures will show, but it is known that comparatively little rubber was brought into Atlantic ports during the first part of the month. Imports through Pacific ports have, however, become a prominent factor in the American supply.

The great peril is that of shipping. There is plenty of rubber on the plantations and large stocks in London, but if submarines succeed in materially reducing ocean tonnage, or if many more bottoms are withdrawn from general commerce for special freight or military uses, it may become extremely difficult to secure cargo space to bring rubber to this country from the East and from England.

Realizing the importance of an uninterrupted supply of crude rubber the Advisory Commission for the Council of National Defense has already taken preliminary steps to prevent any possible shortage of this necessary commodity. Through its Rubber Committee, which in membership is identical with the committee recently appointed by the Rubber Association of America for the same purpose, a request has been made to all rubber manufacturers for information that will be of value in determining the exact needs of the industry and in safeguarding its crude rubber supply.

In this request the manufacturers and importers are asked to state the amount of crude rubber they had on hand on March 31, together with the number of tons in transit actually in the United States and stocks in transit for which permits had been issued, but which have not yet arrived in this country. Estimates are also asked for the quantity consumed during the past six months and for manufacturers' probable requirements for the next half year.

The reply blanks which will be received by the Secretary of the Rubber Association are each given a number, the key to which is held only by him. All information will be treated in absolute confidence.

No rubber manufacturer should hesitate to answer the questions frankly and promptly, for the inventory and estimates will be an essential guide to the Council of National Defense in protecting *all* manufacturers against shortage in the rubber supply.

As announced in the circular letter which is printed elsewhere in this issue of The Rubber Age, it is the evident intention of the Rubber Committee to see that manufacturers whose stocks may become depleted are furnished with the necessary crude rubber so that there can be no interruption in the operation of factories.

No alarm should be felt over the situation; manufacturers and importers should unhesitatingly and loyally co-operate with the Committee which has assumed this large responsibility.

"Excess Profits"

With any new tax scheme that may become a part of the war program, it is essential that diligent care be exercised that progress of industry and trade be not interfered with, that economic laws be observed, and that injustice be avoided.

An "excess profits" tax will probably be adopted in some form. The Secretary of the Treasury has offered the suggestion that rates be greatly increased and that the tax be made retroactive in that it apply to the past calendar year with the date for payment extending from June to September. Such a program will work an injustice to manufacturers, as profits from which the tax should be paid may already have been spent or distributed.

There is popularly some misunderstanding about the meaning of the term "excess profits." In Great Britain, where this tax first attracted attention, "excess profits" means "war profits," or the excess, due to war orders, over the regular profits that were made before the war. In this country, however, a law passed by the last Congress defines them as profits in excess of 8 per cent on the *cash capital* invested. It is desirable that this distinction be appreciated by our legislators when they arrange for war revenues.

The Rubber Trade Association and the Rubber Growers' Association Extend Greetings to the Rubber Association of America

CABLEGRAM

LONDON, April 17, 1917.

PRESIDENT FIRESTONE,
Rubber Association of America,
17 Battery Place,
New York City.

The Committee of the Rubber Trade Association of London, on behalf of all members extend to you, your executive and members, cordial and sincere greetings on the active participation of the United States in the defense of the free peoples.

WILLIAM HENDREY, *Chairman.*

CABLEGRAM

NEW YORK, April 23, 1917.

WILLIAM HENDREY,
Chairman, Rubber Trade Association of London,
6 Mincing Lane,
London, England.

Officers, directors and members of Rubber Association of America unite in reciprocating your greetings. The United States stands ready to make every sacrifice, and we welcome and are proud of the opportunity to fight for our common ideals of humanity and civilization.

FIRESTONE,
President, Rubber Association of America.

CABLEGRAM

LONDON, April 17, 1917.

PRESIDENT FIRESTONE,
Rubber Association of America,
17 Battery Place,
New York City.

Council of Rubber Growers' Association tenders on America Day fraternal greetings Rubber Association of America on entry of United States into struggle for preservation of civilization.

ROSLING, *Chairman.*

CABLEGRAM

NEW YORK, April 23, 1917.

ROSLING,
Chairman, Rubber Growers' Association,
38 Eastcheap,
London, England.

Officers, directors and members of Rubber Association of America unite in reciprocating your fraternal greetings. England and America have common ideals and the United States stands ready to make every sacrifice for the preservation of our civilization.

FIRESTONE,
President, Rubber Association of America.

The Council of National Defense Is Making an Inventory of Crude Rubber Stocks

The making of an inventory of the stock of rubber actually in the United States, and that for which permits have been issued, but which have not yet arrived in this country, has been undertaken by the Council for National Defence in co-operation with the Rubber Association. This step has been deemed necessary in order to insure an adequate supply of this necessary commodity for government and commercial requirements.

"To the Firm Members of The Rubber Association of America, Inc.:

"As a result of the restriction of British permits and the shortage of bottoms, the supply of rubber in the United States at the present time is smaller than it ever has been in the past—taking into consideration the largely increased volume of business which is being done by American manufacturers.

"In order to insure an adequate supply for Government and commercial purposes, it is desirable that stocks of rubber now in the hands of manufacturers, and actually in the United States, should be materially increased.

"On Jan. 6, 1917, the Rubber Advisory Committee of The Rubber Association of America, Inc., sent out certain inquiries with reference to the position of the trade as of Dec. 31, 1916. Replies received from manufacturers, who, it is estimated, consume 80 per cent of the total importations, indicated that stocks in the hands of manufacturers as of Dec. 31, 1916, were 19 per cent less than stocks on hand Dec. 31, 1915, and this notwithstanding the fact that the volume of business in the year 1916 exceeded that of the previous year by 31 per cent.

"In order that the position of the American industry may be accurately known as of March 31, 1917, you are urgently asked to answer the questions on the accompanying sheet. A duplicate sheet is also enclosed for your files.

"The Rubber Committee of the Council of National Defense has been instructed to see that there is an adequate supply of rubber promptly available for Government requirements at all times. Every automobile has a potential military and farm value. On account of the difficulty in separating purely Government requirements from commercial requirements, and to provide against possible interruption in ocean traffic, it is deemed necessary that there should be at least a three months' supply of rubber actually in the United States.

"The information asked for by the Rubber Committee of the Council of National Defense will be compiled in totals by the secretary of The Rubber Association of America, Inc., and will be treated as absolutely confidential. A key has been arranged by which it will not be necessary for you to sign your name on the enclosed blank, as the number appearing on the form will serve as a means of identification. The key will be in the personal custody of the secretary of The Rubber Association of America, Inc.: no one else will have access to it, and it will absolutely not pass out of his hands.

"Should your company feel that its position with reference to crude rubber is not satisfactory due to the curtailment of permits, the Rubber Committee of the Council of National Defense will endeavor to assist you in increasing your stocks, if you so desire. In order to attempt assistance, however, it will be necessary for you to release to the committee the information which you are now asked to submit in confidence to the secretary of The Rubber Association of America, Inc., giving the committee full details of your position.

"The committee will consider all such communications received as strictly confidential, except in so far as it may be necessary to disclose the information contained in the presentation of your case to the licensing authorities.

"In the interests of preparedness against a national rubber shortage we ask your cooperation.

"Very truly yours,
"RUBBER COMMITTEE,
"COUNCIL OF NATIONAL DEFENSE,
"H. STUART HOTCHKISS,
Chairman.
"ARTHUR H. MARKS,
"FREDERIC C. HOOD."
"H. S. VORHIS, *Secretary.*"

The blanks to be filled out by the firm members contained besides the identification number of each firm member, the following questions:

(1) Stocks on hand, in tons, at the mill March 31, 1917?

(2) Stocks in transit, in tons, actually in the United States?

(3) Stocks, in tons, for which permits have been issued but which have not yet arrived in the United States?

(4) Your consumption, in tons, for six months ended March 31, 1917?

(5) Your estimated consumption during six months beginning April 1, 1917, and ending Sept. 30, 1917?

The New Crude Rubber Rules and Regulations

Trade Practices for Buying and Selling Crude Rubber Have Been Adopted by the Rubber Association of America for Use Where No Special Contracts Exist

The crude rubber rules and regulations to govern transactions between buyers and sellers in the United States and Canada that were adopted by the Rubber Association on January 8, 1917, have just been announced. In these rules and regulations it is to be understood that nothing shall be construed as waiving the right in individual transactions to make any special or distinctly contrary agreement, but that the rules shall govern only in cases where no special or specific contract exists. These rules and regulations follow:

Crude Rubber Rules and Regulations

Standard Qualities

All sales purporting to be made subject to the rules of The Rubber Association of America, Inc., shall be considered as made subject to the following rules:

1. Standard qualities consist of the following:

(a) Hevea First Crepe
Hevea Ribbed Smoked Sheets
Hevea Plain or Smooth Smoked Sheets and/or Biscuits
Hevea Unsmoked Sheets and/or Biscuits

to be understood as per standard samples on file with The Rubber Association of America, Inc., at New York and at Akron, Ohio, said samples to be renewed at least once every six months.

Para Standards—To be as understood in New York.

(b) Other qualities—To be as described in sales contract.

Other Qualities

2. Where a parcel of rubber is sold under one of the standard descriptions or under a description superior to the standard for a definite shipment, arrival, delivery, or on the spot, and is found inferior in whole or in part, the Buyer shall have the option of rejection and the quantity so rejected, whether the whole or any portion, shall not constitute a delivery on the contract. Should the time for delivery have expired the Seller shall have ten (10) days to replace the quantity rejected at the original point of arrival or delivery in the United States of America or at the port of New York, provided that such quantity was in the opinion of the arbitrators a bona fide tender against the contract. In case the Seller does not replace, the Buyer at his option may cancel the contract, or buy and charge the difference, if any, to the Seller.

3. Where a parcel of rubber is sold with a description of quality inferior to that specified in Rule 1, Section A, and upon delivery is found inferior to the description in whole or in part, then the Buyer must accept the same with allowance, provided such allowance, in the opinion of the arbitrators, be not more than two (2c.) cents per pound on the inferior portion; but should the allowance be more than two (2c) cents per pound, the parcel, in whole or in part, may be rejected and the Seller may substitute proper quality to fulfill his contract at the original point of delivery in the United States of America or Canada or at the Port of New York within ten (10) days from the time of rejection or within the time for delivery as the case may be. In case the Seller does not replace, the Buyer at his option may cancel the contract, or buy and charge the difference, if any, to the Seller.

Delivery Weights

4. The word "Ton" shall mean a ton of 2240 pounds.

5. Final delivery on any contract to be within 100 pounds of the weight contracted for, but in any case the nearest weight of the contract quantity that the average weight of the packages of the final tender admits. But where it is found impossible to deliver within 100 pounds, taking the average weight of the packages tendered, any deficiency or excess shall be invoiced or invoiced back, as the case may be, at the market price on the date of delivery. Should Buyer and Seller fail to agree on the market valuation at such time, same is to be fixed, without fee, by the Arbitration Committee.

6. The words "about," or "more or less," when used to define quantities contracted for, shall mean the nearest amount which Seller can fairly and reasonably deliver, but no excess or deficiency shall be greater than 2½ per cent. This rule shall apply only on specific lots.

Declaration of Vessels

7. After declaration, should the vessel, or vessels, carrying any portion of a contract calling for shipment or arrival be lost, such contract is to be cancelled to the extent of the goods lost.

Should the shipment not be declared by the Seller prior to the loss of the vessel carrying the shipment, such loss shall not vitiate the contract or any part thereof.

Prompt Shipment

8. The term "prompt shipment" from foreign ports shall, under normal conditions, be considered as folows:

Within a period of—
Fifteen (15) days, if shipped from Great Britain or Europe.
Thirty (30) days, if shipped from the Far East.
Thirty (30) days, if shipped from the Amazon Valley.

Checking Weights and Approving Qualities

9. The Buyer shall have the option of having his representative at the dock or warehouse to check the weights or to pass upon the quality. In the event that weights or quality are approved the responsibility of the Seller ceases in respect to said weights or quality.

In event Buyer does not exercise this option, actual gross weights with proper tare allowance ex dock or ex store at port of arrival shall govern weights and point of delivery in the fulfillment of a contract.

Seller's Responsibility

10. In the event of the Seller making shipment direct to the Buyer, then the Seller's responsibility for the safety of the goods does not cease until the goods are delivered to the transportation company or its agents.

Should Buyer designate an agent or representative to take delivery, Seller's responsibility ceases when Delivery Order is in the possession of said agent or representative and goods have passed the weigh master's scales.

Weighing and Taring

11. Unless otherwise stated in the contract, all tenders of plantation rubber or rubber in bales may be weighed in drafts at the option of the Seller. Rubber shall be weighed gross to the 1 pound, if in drafts, and shall be weighed to the ½ pound, if weighed by the package. Cases tared shall be weighed to the ½ pound. Paras shall be grossed and tared case by case to 1 pound. All other grades of rubber which cannot be readily tared are to be billed at tares guaranteed by Seller.

Monthly Delivery Contract

12. Where a contract calls for monthly delivery, arrival or shipment, each month's or specified part of a month's delivery or shipment is to be treated as a separate contract.

Option of Deliveries

13. Where rubber is sold for shipment from a foreign port, the Seller may tender in fulfillment of the contract rubber not coming from that port, provided it is of the same description and quality as the rubber named in the contract and is tendered according to the terms of the contract so far as the time and place of delivery are concerned.

Notification of Rejections

14. If acceptance of any parcel of rubber is refused by a Buyer, notification must be given the Seller in writing within seven (7) days after receipt in the Buyer's factory, stating specific reasons for such rejection. In case of claims or rejection rubber shall remain in original cases pending final determination.

Special Agreements

15. Any special agreement expressed in a written contract supersedes any of these rules to the extent the rule is affected thereby.

Failure to Fulfill Contract

16. Whenever it may be admitted by the Seller or decided by arbitration that the Seller has failed to fulfill the terms of a contract, then the Buyer may, at his option, cancel the contract, or purchase quality called for in the open market, charging the difference, if any, to the Seller.

Whenever it may be admitted by the Buyer or decided by arbitration that the Buyer has failed to fulfill the terms of a contract, then the Seller shall be released from all obligations connected thereto, and Buyer shall be responsible for any loss occasioned by said failure.

Government Taxes

17. On contract for future delivery any import duty or tax imposed by the United States or Canadian Governments on crude rubber shall be for the account of the Buyer.

Guarantee of Shrinkage

18. When the rubber is sold on a guaranteed shrinkage in washing and drying, Buyer must render the outturn to the Seller within three (3) months from the time of delivery.

Place of Delivery

19. It is understood that when goods are sold "ex dock" or "ex store New York," the point of delivery shall mean the Port of New York.

Miscellaneous

20. A contract calling "for delivery" shall be construed to mean that the rubber shall be weighed and ready for shipment or tender to the Buyer during the period stipulated in the contract.

A contract calling "for arrival" during a certain period shall be construed to mean that it shall arrive upon a vessel at the port named during the time stipulated in the contract and is to be tendered or shipped as soon thereafter as conditions permit.

A contract calling for shipment from a certain country or countries or a specified foreign port during a certain period or periods shall be construed to mean that the date of the bill of lading at the port of shipment covering such goods called for in the contract shall be within the time stipulated for shipment.

Arbitration

21. All disputes between Buyer and Seller are to be settled by arbitration by the arbitrators of The Rubber Association of America, Inc., the award of the arbitrators to be final.

Financial News of the Companies

Marathon Increases Dividend—B. F. Goodrich Rubber Co. Reduces Capital —Converse Rubber Shoe and Standard Tire Increase Capital

Marathon Increases Dividend

Special Akron Correspondence

The Marathon Tire & Rubber Co. has notified its stockholders that the dividend, payable May 2, has been increased from six to seven per cent yearly. Directors recently voted the increase. In a report submitted to stockholders, directors said that the business thus far for the fiscal year, which began September, assures an increase of 73 per cent over the previous year.

Converse Increases Its Common Stock

Converse Rubber Shoe Co. of Malden has increased its authorized amount of common stock from $75,000 to $375,000 and will use $285,000 of the increase to pay a 380 per cent stock dividend.

National India Rubber has New Treasurer

Maurice C. Smith has been chosen treasurer of the National India Rubber Co., Bristol, R. I., succeeding A. H. Emerson, who has become wire sales manager for the company.

Goodrich Reduces Capital

The B. F. Goodrich Rubber Co. has filed a certificate with the Secretary of State, at Albany, N. Y., announcing a reduction of capital from $87,300,000 to $86,400,000.

Standard Tire Increases Capital

The Standard Tire & Rubber Co., Willoughby, Ohio, has increased its capital from $400,000 to $750,000.

Rubber Assn. Cooperates With Government

Appoints Committee to Work with the Council of National Defense—Special Meeting to Be Held to Change Arbitration Rules

Committee to Cooperate with Government

At a joint meeting of the Executive and Rubber Advisory Committees of the Rubber Association of America, held at the headquarters of the Association, 17 Battery Place, New York, on Thursday, April 5, a committee consisting of H. Stuart Hotchkiss of the United States Rubber Co., Arthur H. Marks of The B. F. Goodrich Co., and Frederic C. Hood of the Hood Rubber Co., was unanimously appointed to represent the Association and on its behalf to offer to the United States Government, through the Advisory Commision of the Council of National Defense, the service of The Rubber Association of America.

It was also voted that the newly appointed committee be instructed to cooperate in every way with any committee already appointed, or which might be appointed by the Advisory Commission of the Council of National Defense of the United States Government, and that it report to the Executive Committee of the Rubber Association from time to time its opinion as to how the Rubber Association and its members, individually, could best serve the interests of the Government.

Special Meeting to Change Arbitration Rules

A special meeting of the firm members of the Rubber Association as ordered by the Executive Committee, has been called by Secretary Vorhis. It will be held at the Association headquarters, 17 Battery Place, New York City, on Thursday, April 26, at 4.30 p. m. Action will be taken on amendments to the constitution and by-laws, which were approved by the Executive Committee. The circular calling this special meeting sets forth its objects as follows:

It has been found that the organization and the work of the Committee on Arbitration have been somewhat hampered by the restrictions placed upon it by some provisions in the recently adopted amendments to the Constitution and By-laws. It is the intention of the Association that this Committee should be free to establish working rules and regulations for the conduct of arbitrations, always, of course, subject to the approval of the Board of Directors or of the Executive Committee. With this end in view it is proposed that the Constitution and By-laws be still further amended as follows:

Amend Article VI, Section 2, Subdivision (d) by striking out in the first paragraph the words "and that thereafter two members shall be appointed by the Board of Directors or by the Executive Committee in each year. If any vacancies should occur in this Committee, such vacancies may be filled by the Board of Directors or by the Executive Committee at any regular or special meeting," and substituting therefor the words "When vacancies occur in this committee through expiration of term of office or otherwise, such vacancies shall be filled by the Board of Directors or by the Executive Committee at any regular or special meeting."

Amend Article VI, Section 2, Subdivision (d) by striking out word "duties" in the second paragraph.

Amend Article VI, Section 2, Subdivision (d) by striking out everything after the second paragraph, with the exception of the last two lines which shall read as follows:

"The Secretary of The Rubber Association of America, Inc., shall be the Secretary of the Committee on Arbitration," thus causing Article VI, Section 2, Subdivision (d) to read as follows:

(d) A Committee on Arbitration to consist of seven members, four of whom shall be manufacturers and three crude rubber importers or brokers. The chairman of such committee shall be chosen by the members from their own number for a term of three (3) years, and the term of each of the additional members shall be three (3) years, except that at the time when this committee shall be originally appointed, the six members then appointed other than the chairman, shall decide by lot which of their number shall serve for periods of one, two and three years respectively, two members of the committee being assigned to each class. When any vacancy occurs in this committee through expiration of term of office or otherwise, such vacancy shall be filled by the Board of Directors or by the Executive Committee at any regular or special meeting.

This Committee shall have complete supervision in respect to all matters for arbitration referred to The Rubber Association of America, Inc., and shall make rules and regulations for the conduct and disposition of all matters submitted to arbitration subject to the approval of the Board of Directors or of the Executive Committee. It shall provide a form of agreement not inconsistent with existing provisions of law by which, so far as practicable, the decisions of the arbitrator or arbitrators shall be as effective as judgments of the Supreme Court of the State of New York. It shall compile and from time to time revise and keep a list of qualified persons, not less than twenty-five, willing to act as arbitrators under these rules, and who shall be members of The Rubber Association of America, Inc. This list shall be known as "The List of Official Arbitrators of The Rubber Association of America, Inc."

The Secretary of The Rubber Association of America, Inc., shall be the Secretary of the Committee on Arbitration.

Many Rubber Companies Plan Extensions

Mechanical Rubber to Have a Large Addition—The Goodyear Mechanical Building—Boone Arranges for Factory—Many Other New Buildings Planned

The Goodyear Mechanical Goods Building

The new mechanical goods factory building being erected by the Goodyear Tire & Rubber Co. at Akron, Ohio, to provide for the company's rapidly expanding business in mechanical rubber goods, will add more than eleven acres of floor space to the total factory area. The new building is 500 ft. long by 200 ft. wide, 5 stories high, and is the largest building in the Goodyear group.

Monatiquot Building Additions

The Monatiquot Rubber Works Co., South Braintree, Mass., reports the completion of a new addition to its factory number three and that rapid progress is being made on factory number four. A new power plant and a new line of machinery has been added.

Mechanical Plant to Be Enlarged

Work on a new seven-story factory building at the plant of the Mechanical Rubber Co., Cleveland, Ohio, will be begun as soon as the building trades dispute has been settled.

The building will cost $200,000 and permit employment of 200 to 300 more persons, says A. T. Hopkins, assistant general manager.

Racine Tire to Treble Output

The Racine Auto Tire Co., Racine, Wis., will shortly award contracts for the erection and equipment of a $100,000 tire and tube manufacturing plant on a 5-acre site purchased last fall. All buildings will be of reinforced concrete, steel and brick, thoroughly fireproof, and when completed will enable the company to more than treble its output.

Boone Arranges for Wisconsin Factory

I. V. McLean, president of the Boone Tire & Rubber Co., of Sycamore, Ill., has completed arrangements for a tire factory in Chippewa Falls, Wis. The new factory will be located on the Progressive League property, at the corner of Columbia and Wagner Streets. The company now owns two tire plants, one at Sycamore, Ill., and one at Des Moines, Iowa.

Building operations for the new factory will begin as soon as the frost is out of the ground. The machinery has already been ordered, the Boone Tire & Rubber Co. having decided to build a factory before the location had been procured. It is planned to start manufacturing tires by September.

One unit of the factory will be built first, and additional buildings will be erected according to the company's plans. The building cost is estimated at approximately $50,000, and $95,000 will be expended on machinery.

Southwestern Tire to Build Plant

The Southwestern Tire & Rubber Mfg. Co. will establish a plant at Dallas, Tex., to cost $80,000. The company is capitalized at $250,000, and the officers of the company are R. L. Cameron, president; W. W. Taxis and L. G. Murray, vice-presidents; W. E. Suttles, secretary, and J. G. Gillespie, treasurer. The plant is to contain 30,000 sq. ft.

New Goodyear Building in Sacramento

The new branch of the Goodyear Tire and Rubber Co. at 1011-13-15 Fourteenth Street, Sacramento, Cal., has just been completed. It consists of a one-story show and office space and a two-story warehouse. George Bellis is local manager of this branch.

Rubber Firm to Build in Lorain

The Napeer Rubber Company of Akron has taken an option on a factory site in Lorain, Ohio, where, according to reports, it will erect a factory building. The company is incorporated for $500,000.

New Plant for the Eagle Rubber Company

Plans have been prepared for a new 60 x 80 ft. plant for the Eagle Rubber Co., Ashland, Ohio, which is to cost $20,000. The equipment is being purchased.

Firestone to Erect Building in Dallas

R. J. Firestone, of the Firestone Tire and Rubber Company, has announced that his company will erect a $100,000 office building in Dallas, Tex., as soon as a suitable site can be procured.

Manhattan Plans New Building

Plans for the erection of a four-story building to cost $140,000 as an addition to the plant of the Manhattan Rubber Co. at its present mill property in Willett Street, Passaic, N. J., have been approved.

Panther to Build Addition

The Panther Rubber Co., Stoughton, Mass., will build a two-story brick addition to its factory, 140 ft. long and 40 ft. wide.

Uhrichsville May Secure Rubber Factory

Representatives of the Rubber Specialties Co., Columbus, Ohio, were recently in Uhrichsville, Ohio, considering the selection of a factory site there.

News of the Rubber Manufacturers

Changes in Canadian Consolidated—Court Refuses to Restrain Firestone—Factories Raise Flags—U. S. Rubber Is Earning 20 Per Cent on Common—Other Items of Interest

Changes in Canadian Consolidated Rubber

At the meeting of the Canadian Consolidated Rubber Co., held on April 3 the old board of directors was re-elected, with the addition of A. D. Thornton. At a subsequent meeting of the board of directors, T. H. Rieder, who has been vice-president and general manager of the company for several years, was elected president and Victor E. Mitchell, K.C., was elected vice-president.

T. H. Rieder, who was elected to the presidency of the company, furnishes an interesting example of rapid advancement in Canadian business. At less than forty years of age, he is the active head of an industrial merger with assets of well on to $20,000,000. He is fairly entitled to rank as one of the youngest and most successful executives in Canadian business.

Mr. Rieder has grown up with the rubber industry of Canada, and before reaching his present post had worked up steadily from minor positions in both the selling and manufacturing departments of the company. He has been in virtual charge of the business for several years past as vice-president and general manager, and now assumes the chief executive post in the company.

Court Refuses to Restrain Firestone

Judge Mayer in the United States District Court has denied a motion for a preliminary injunction in the case of the Perlman Rim Corporation against the Firestone Tire & Rubber Co. for alleged infringement of patents on demountable rims. The plaintiff asked for the order to restrain the defendants from manufacturing rims pending settlement of an action for damages it has filed.

Judge Mayer took the view that the injunction might well be refused inasmuch as the trial of the case will be held in the first week of June. He thought the plaintiff could afford to wait six weeks longer for the question of a final injunction to be passed upon.

He cautioned the defendants to meantime refrain from taking any action that would tend to convey an impression that his decision was a judgment of the merits of the case, that they should cause no publication of or comment upon his decision with the intent to convince others that the decision was a victory over the plaintiff.

Seamless Rubber Co. Sold to Drug Firm

At a meeting of stockholders of the Seamless Rubber Co., before Judge C. H. Thomas in the United States District Court at New Haven on April 10, the court approved the sale of the plant to the United Drug Co. of Boston, for $681,000 and allowed Vernal W. Bates $7,500 instead of double that amount, which he claimed as receiver of the company. His counsel, Frank Patterson was allowed $15,000.

Explosion in De Lion Factory

An explosion at the factory of the De Lion Tire Co., at Trenton, N. J., on April 10, caused about $10,000 damage, and resulted in the injury of 16 men. No serious interruption of the company's business will be suffered, as a good quantity of tires is in the hands of distributors, and quarters have been secured already for a quick resumption of production.

Boston Woven Hose Has Flag Raising

On April 11, the Boston Woven Hose & Rubber Co. at its plant at East Cambridge, Massachusetts, demonstrated in no uncertain fashion its patriotic spirit and the fact that it is fully abreast of the times.

What originally started as a flag-raising to be held by one of the buildings in the plant finally developed, as the spirit

Flag Raising Parade at Boston Woven Hose

of enthusiasm became contagious throughout the organization, into a monster celebration at which ten new, large American flags were unfurled to the breeze on ten different buildings as the factory whistle blew at 12.30.

A fife and drum corps consisting of forty-five boys headed by the officers of the Company including George E. Hall, vice-president and general manager, Henry B. Sprague, treasurer, Mayor Rockwood of Cambridge, together with the City Council and heads of the Fire, Police and Public Building Departments led more than 1750 employees of the factory in a parade around the factory buildings, each flag being saluted as the procession passed by.

At the close of the parade the entire Company assembled in the large factory yard, where to the accompaniment of the fife and drum corps and the factory bugler, the Star Spangled Banner was sung by all present.

Every Department Has a Flag

Patriotic enthusiasm which employes of the Continental Rubber Co., Erie, Pa., have exhibited since the national situation became acute was given impetus when every department hung an American flag. The men contributed to the expense and as a result the big plant is a blaze of color.

Hood Mixers Present American Flag

The night force of the mixing department of the Hood Rubber Co., Watertown, Mass., recently presented foreman James Stewart with two American flags as a token of their patriotism.

Electric Hose Insures Employes

The Electric Hose and Rubber Co., Wilmington, Del., has just completed arrangements whereby the lives of all its employes are insured without cost to them.

Five hundred employes of the concern, and the officials as well, are included. The total amount of insurance will exceed $300,000. All workers at the plant, irrespective of age or sex, are embraced, as are also representatives of the company in other cities. Because of the large number in the group, no medical examination was necessary, the attaches being accepted in a body.

While all employes who have been in the service for one year, or longer, are insured for the equivalent of one full year's pay, those who have not yet been employed that long are also cared for. Those who have completed six months service and less than a year, are protected to the amount of one-half a year's salary; those who have been with the company for three months and less than six months are insured to the extent of one-quarter of a year's wages.

The minimum amount of insurance payable, in any event, will be $250, while the maximum on the life of any one person will be $3,000. As the continuance of the pay check to the family for one year, in the event of death, is of vital concern, it has been further arranged to pay the insurance to the beneficiary in twelve equal monthly instalments.

Vulcan Extensions

The Vulcan Rubber Co., Erie, Pa., has awarded a contract for the construction of a railroad switch from the Pennsylvania Railroad to its plant on the West Lake road just beyond the city limits. This marks the first actual step in the enlargement of this plant.

It is expected that by the middle of April contracts will have been let for the erection of additions and new buildings which, when equipped, will provide for more than double the output of automobile innertubes and tires. Plans for big additions to the plant have been completed by Architect William Frank. Michael Liebel, Jr., former mayor and retired member of congress is president of the Vulcan Rubber Co., and Edward Heuer is vice-president and treasurer.

The La Crosse Rubber Mills Output

According to a statement of the La Crosse Rubber Mills Co., manufacturer of rubber boots and shoes, La Crosse, Wis., it has completed extensive improvements to its plant and is now making 21,000 pairs a day as compared with 11,000 pairs a year ago. This large production is not taking care of the orders on file. New machinery has been received and is ready for installation which will increase the output of the factory to 25,000 pairs a day.

Revere to Buy Its Power

The Revere Rubber Company has decided to shut down its steam and electric plant at the Chelsea, Mass., factory, and has just signed a long-term contract with the Edison Company for its entire supply of electricity for all purposes, amounting to approximately 5,000 horse-power.

Grants Employees 10 Per Cent. Bonus

According to press reports, the Lambertville Rubber Co., Lambertville, N. J., has granted to the employes in every department of its plant a 10 per cent bonus, to be paid every three months.

U. S. Rubber Earning 20 Per Cent on Common Stock

Col. Samuel P. Colt, president of the United States Rubber Co., says that on the basis of the first quarter's earnings, and considering orders contracted for, the United States Rubber Co, should earn at least $20 a share for its $36,000,000 common, after preferred dividends in 1917 as compared with $15.12 a share for the same amount of common stock in 1916. Colonel Colt is quoted:

Sales in the first quarter of the year gained 20% over the corresponding three months a year ago. By the end of January we had taken orders for practically all the footwear we can turn out until the end of 1917. If we had the capacity we could secure business for at least 50% additional.

Our sales last year, including all departments, were divided as follows: Footwear, $50,000,000; tires, $40,000,000, mechanical goods and miscellaneous, $35,000,000.

Footwear sales this year should show a minimum of $60,000,000 and may run as high as $70,000,000; tire sales will show at least $50,000,000 and may run up to $60,000,000; mechanical goods will show anywhere from $40,000,000 to $45,000,000.

In other words total sales of the United States Rubber Co. this year will be at least $150,000,000 and may run as high as $170,000,000.

The remarkable increase in our tire business is shown by the fact that sales in this department in 1915 were about $23,000,000. This means that 1917 tire business will show an increase of more than 100% over the business done two years ago.

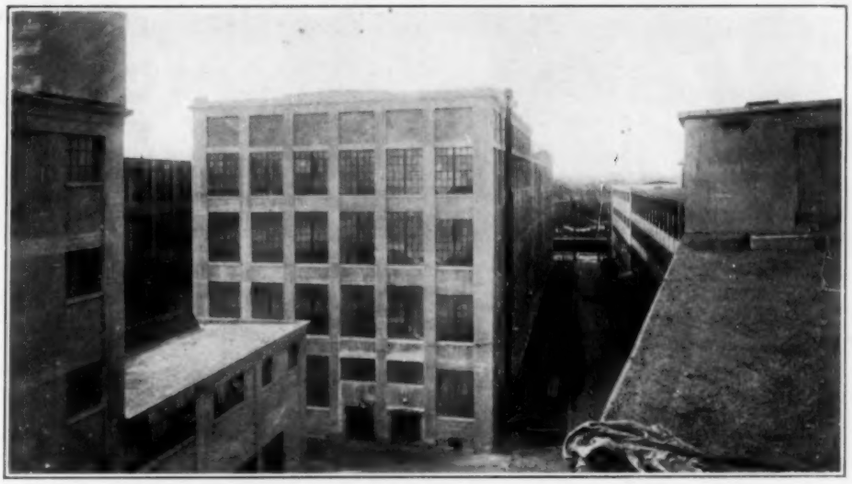
The financial position of the company was never as strong as right now. While the underwriting syndicate has sold only about $40,000,000 of the $60,000,000 of the recent issue of bonds, this makes no difference to the United States Rubber Co. The company has already received a full payment in cash on the entire $60,000,000 issue of bonds sold at 94½ to the Kuhn Loeb syndicate.

England as an ally, instead of only a friend, is already working out to the advantage of the United States Rubber Co. Previous to the declaration of war by this country, it was necessary to secure a "pass" for the importation of crude rubber into this country, and English authorities had a way of allowing only a part of the rubber desired to be shipped. For instance, if we asked for 400 tons, we usually received about 200 tons.

A few days ago this country asked for 400 tons and received a "pass" for the full 400. In other words England regards us rightfully as an ally and is showing her friendship even to the extent of helping our business interests in so far as she is able.

The talked of curtailment in automobile production as a result of the declaration of war has failed to show any lessening in the demand for tires. The United States Rubber Co. on business already on hand is certain to run at capacity in this department throughout the season.

There has been no discussion of any plan for a resumption of dividends on the common stock in the near future. In fact, it is unlikely that there will be any common dividend this year. Times like these are times for conservation of resources. Our earnings are very large, but we think it the part of wisdom to keep them in our treasury.



The new building of the Boston Woven Hose & Rubber Co. at Cambridge, Mass., has just been completed by the Stone & Webster Engineering Corp. It is of reinforced concrete construction and is 322 ft. long by 65 ft. wide.

The first floor is used as a press room for rubber heels and fiber soles. The well equipped friction tape department occupies the second floor, while on the two upper stories are manufactured rubberized fabrics and artificial leather.

Mrs. Laughton Retires

Mrs. E. V. Laughton has retired as treasurer and general manager of the Chicago Rubber Clothing Co. of Racine, Wis.

For twenty-four years she has been the manager of this big concern, which now employs about 400 men and women and has a capital stock of $350,000.

Her husband, George H. Laughton, founded the company in 1879, and upon his death in 1893 she immediately took charge. Her successful handling of the affairs of the concern insured her re-election year after year by the stockholders, and it was only at her urgent request that she was permitted to resign as treasurer.

Every employe of the company was and is an ardent admirer of Mrs. Laughton. Every traveling salesman representing the company had unbounded praise for the energetic, resourceful woman who had been the backbone of the business for a third of a century.

Miller to Operate in Arkansas

The Miller Rubber Company, Akron, Ohio, has been granted permission to operate in Arkansas. Richard M. Mann of Little Rock was named as agent for the state.

Railroad Man Becomes Fisk Traffic Manager

A. D. Phillips recently general eastern agent of the Western Maryland Railway, has become traffic manager of the Fisk Rubber Co. of Chicopee Falls, Mass.

Mr. Phillips is an experienced traffic man, having been engaged in railway work since 1896, starting as clerk in the Kanawha Dispatch office in Philadelphia. Since then he has been successively located with the Seaboard Air Line, State Dispatch, Missouri Pacific and Western Maryland.

In his new connection Mr. Phillips will have entire charge of the shipping routing and rating of the output of the Fisk Rubber Co. plant.

Recent Election of the S. A. E.

The following have been elected members of the Society of Automobile Engineers:

A. A. Brewster, manager of development of solid tires, B. F. Goodrich Co., Akron, Ohio.
G. L. Current, engineer of tests, B. F. Goodrich Co., Akron, Ohio.
W. C. Geer, director of development of goods and processes, B. F. Goodrich Co., Akron, Ohio.
Harry A. Hoffman, manager of development department, B. F. Goodrich Co., Akron, Ohio.
Herbert J. Leab, assistant manager, Fisk Rubber Co., Chicopee Falls, Mass.

R. M. Loewenthal Leaves Loewenthal Co.

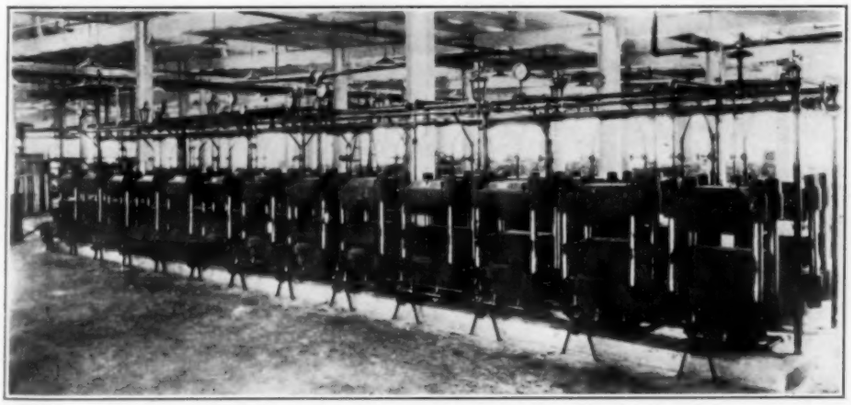
R. M. Loewenthal, for the past six years sales manager of The Loewenthal Co., dealers in rubber scrap, Brooklyn, N. Y., has severed his connections with that concern. Mr. Loewenthal has no definite plans for the future.

New Superintendent at National Rubber

A. R. Murray has succeeded William Walsh as superintendent of the National Rubber Co.'s large plant at Pottstown, Pa.

H. G. Moore Conducts Star Sales on Coast

Harry G. Moore has been appointed Pacific Coast sales representative for the Star Rubber Co., Akron, O. Mr. Moore will have his headquarters in Los Angeles and is arranging for distributors in all principal cities of the Pacific Coast.



SOUTHWARK IMPROVED VULCANIZING PRESSES

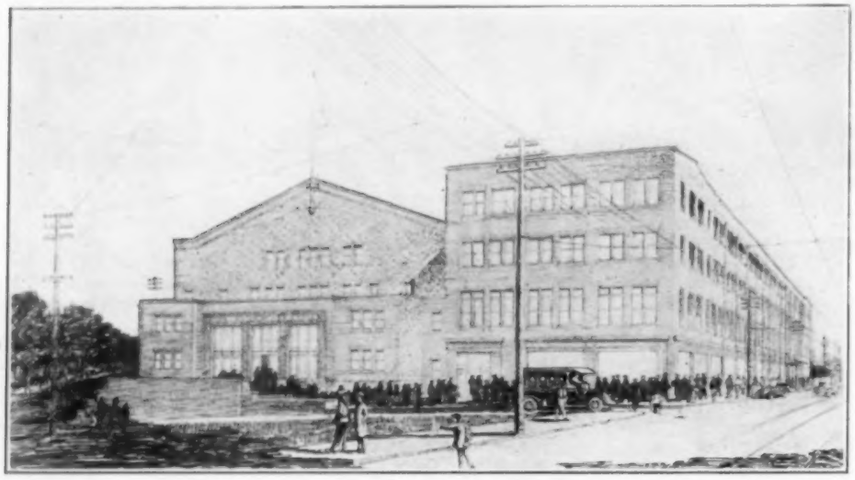
The Southwark Foundry & Machine Co., Philadelphia, Pa., has recently developed and built several rubber heel presses and vulcanizer doors. The photograph shows an installation of eighty 2½ in. by 24 in. steam platen presses, all of which are equipped with Southwark special two pressure operating valves of the piston type.

Happenings at the Rubber Metropolis

The Plans for Goodyear Hall—M. I. T. Alumni Visit Factories—F. A. Seiberling Helps College—Jacob Pfeiffer Will Build 500 Houses —Aviator Has Applied for Commission

The Plans for Goodyear Hall

The architect's drawing for the new Goodyear Hall has been reproduced in the accompanying illustration. The size of the building will be 170 x 400 ft. overall, the front four stories high and the rear two stories.



GOODYEAR HALL

A large stage, suitable for entertainments, will occupy one end, and opens either on the gymnasium or on the smaller auditorium in the north end of the building. This smaller auditorium will seat, with the balcony, about 1500 people. For convention purposes, or any entertainment purpose where an unusual crowd must be seated, the gymnasium can be used, and with the balcony will seat nearly 5,000 persons. The structure will be thoroughly fireproof, of brick and steel construction with plenty of entrances and exits.

The front part of the second floor of the building, as well as the two upper stories of the front part, will be arranged as school rooms, lounging and smoking rooms, reading rooms, and rooms for similar club purposes.

All equipment will be strictly modern, and calculated to supply the entire recreational needs of such a body as the 20,000 people now comprising the working force of Goodyear, together with visiting Goodyearites from the subsidiary companies, and the salesmen from the road and branches when in Akron.

M. I. T. Alumni Visit Akron Factories

Special Akron Correspondence

"Rubber rascals raise the roof!
Roaring revelry runs the roost.
April 20th—on to Akron."

This verbiage appeared on the official program of the Technology Clubs Associated, of the Massachusetts Institute of Technology, in convention last week in Cleveland. Over one hundred of the alumni on Friday came to Akron to visit the huge rubber companies.

Three interurban carloads of M. I. T. alumni and their wives arrived in Akron early in the morning. They visited the Goodrich, Goodyear and Firestone plants. Each rubber company entertained a group composed of forty visitors. Those who visited the Goodyear later were escorted through Stan Hywett Hall, the palatial home of F. A. Seiberling, president of the company. The Firestone group was taken to O. C. Barber's "Anna Dean" farm, which comprises 1300 acres near Barberton.

At the Goodrich the alumni were photographed at the especially decorated gate, and were given canes bearing the "Tech" colors, gray and red. Goodrich guides conducted them through many departments. The visit concluded with a banquet in the cafeteria. Goodrich M. I. T. alumni headed the reception committee.

M. I. T. ALUMNI AT THE GOODRICH MAIN ENTRANCE

Will Build 500 Homes

Jacob Pfeiffer, president of the Miller Rubber Co., will erect 500 houses in Akron, Ohio, to relieve the existing housing congestion.

Seiberling Helps University

F. A. Seiberling, president of the Goodyear Tire & Rubber Co., Akron, Ohio, has contributed $100,000 to the Lincoln Memorial University

Goodyear Women Have a Recreation Room

Special Akron Correspondence

For the benefit of its office women, the Goodyear Tire & Rubber Co. has opened a recreation room and dispensary at the plant. It is equipped with the latest magazines, a piano and lounging chairs. The rugs are removable for dancing. In connection there is a silence room containing fifteen cots for the use of girls who use the dispensary. Miss Clara Bingham is in general charge of the social service work, and Miss Bertha Roberts is the nurse in charge of the dispensary.

Recently a relief association for women of the factory and office was formed. It is similar to the Goodyear Relief Association which is for men. Miss Clara Bingham is president.

Akron Aviator Has Applied for Commission

Special Akron Correspondence

At least one Akron man will be at the front to assist in the operation of aircraft. He is Clarence Maranville, who is now in training at the Doud school in Washington, D. C. He has applied for his commission. Maranville has studied military strategy from an aviation standpoint and has had experience as an aviator. He purchased his own machine and made several flights on the Pacific coast.

Goodyear Signs Up Ohio Coach

Coach I. Ray Martin, for the past three years director of athletics at Heidelberg university, Tiffin, Ohio, has just been appointed athletic director of the Goodyear Tire & Rubber Co. at Akron. Coach Martin's efforts at Heidelberg were crowned last season by the best athletic record ever made at that university.

New Manager for Goodyear Department

B. R. Barr has become manager of the dealers' service department of the Goodyear Tire & Rubber Co., Akron, Ohio.

Tire Trade Items of General Interest

Description of De Lion Cord Tire—Two New Victor Tires—Bull's Eye Tread Tire Co. Organizes—The United States Conference—War Department Specifications

Bull's Eye Tread Tire Co. Organize

The "Bull's Eye Tread" Tire Co., Inc., of which C. Gross is president, has been organized at San Francisco, Cal., to manufacture and market tires. The new concern will enlarge the facilities of the Pacific States Tire and Rubber Co., which has been doing a small business in tires.

The Pacific States Tire and Rubber Co. began operations on Nov. 6, 1916, with a modest capital of $1,800, and employed, beside P. C. Steinmetz, the superintendent and inventor of the tire, one man, turning out two or three jobs a day, retreading their customers' tires with the "bull's eye tread." Their business increased steadily until now they are employing thirty-five men, turning out thirty tires daily, and are 1000 tires behind on orders.

In about three months from now the "Bull's Eye Tread" Tire, Inc., expects to be in a position to turn out 500 complete tires a day.

New Victor Tires

Ribbed tread tires are becoming more popular every year and are, consequently, being manufactured by a greater number of concerns. The Victor Rubber Co., Springfield, Ohio, has added to its line of plain and non-skid casings a ribbed tread tire which is said to be made from the highest quality of materials obtainable and to sell at a comparatively popular price

The company is continuing to make its Victor Non-Skid, the attractive appearance of which is well known. In this tire most of the added non-skid tread is concentrated in the center of the tire, and braced by the legs of the letter V, the non-skid feature and the ribbed tread feature being combined, and as a result it is claimed that this tire is unusually economical in gasoline consumption. Victor tires are guaranteed for 5,000 miles and are distributed over the United States through fifty distributing agents.

THE NEW VICTOR TIRES

P. C. Burt Joins Amazon Force

P. C. Burt of Akron, O., has joined the sales department of the Amazon Rubber Co. of that city.

Gryphon Is Making Tires in New Factory

The Gryphon Rubber & Tire Corp. has started active manufacturing in its new plant at 192nd street and Bailey avenue, New York. The plant is fully equipped with the latest tire and tube making machinery and has a daily capacity of 400 tires and 500 tubes.

The officers are as follows: J. W. Jones, president; P. S. Jones, vice-president; S. A. E. Cunningham, treasurer; J. C. Straussman, secretary, and A. A. Gordon, general manager. Mr. Gordon was formerly with the Ajax company. He was also vice-president and general manager of the Gordon Rubber Co., Canton, Ohio, and general manager of the Newcastle Rubber Co., Newcastle, Pa.

United States Tire Conference

A conference of the United States Tire Co.'s salesmen and resident managers of the branches in the Detroit district was held recently in Detroit, presided over by W. Solburn Standish, district manager. Among those in attendance were: C. S. Putnam, E. A. Montgomery, W. J. Chisholm, C. T. Day, C. R. Gray, R. E. Cheahan, E. S. Stimpson and H. H. Davies, all of Detroit; C. S. Sowers and H. V. Filkins, of Grand Rapids; C. Q. Vaughn, resident manager at Lima, O., and G. H. Wood and W. Wilmington of the Toledo branch.

The Ideal Cellular Truck Tire

Special Akron Correspondence

The Swinehart Tire & Rubber Co., Akron, Ohio, has just perfected a new cellular truck tire. The tire has an extra high tread and has non-skid qualities. It is claimed to be 30 per cent more resilient than an ordinary smooth tread truck tire thus making greater speed possible. Actual tests under heavy load have shown the new tire to run from 12,000 to 16,000 miles. They have special base construction.

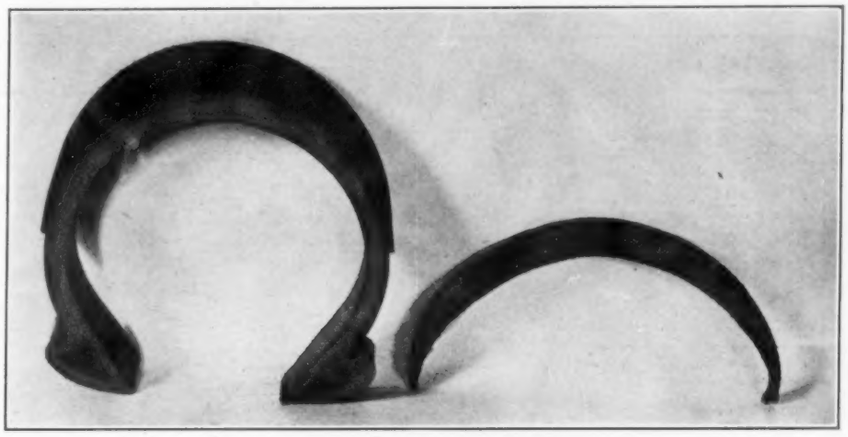
BeSaw Chief Speaker at Luncheon

E. W. BeSaw, Western district manager of the Firstone Tire & Rubber Company, was the chief speaker at a joint meeting and luncheon of the Spokane Ad Club and Rotary Club.

Cord Tread Tires

Under the name "De Lion Cord Tread," the De Lion Tire & Rubber Co., Trenton, N. J., is marketing a non-skid tire of novel construction. The new tire sells for the same price as cord tires and bears a 7,500-mile guarantee. The carcass of the tire is built up in the usual manner. In making the tread, however, three layers of fabric heavily coated with rubber are laid one on top of the other to form a sheet which is then cut up into crescent-shaped pieces like the one shown in the cut herewith

These crescents are placed on the tire carcass, at an angle of 45 degrees, and in sufficient number to completely cover the casing. They are pressed tightly together and vulcanized forming a continuous tread.



THE DE LION CORD TREAD TIRE

The tread fabrics are impregnated with rubber by the De Lion vacuum process which is claimed to exclude all air and thoroughly insulate each end of all the threads of the fabric. In this process rubber solution is drawn into the fabric by air suction instead of being frictioned into it in the usual manner.

The fabric contained in the tread stands on edge and after a little wear protrudes, making a rough surface of rubber and fabric which is claimed to have admirable anti-skid properties.

War Department Truck Tires Specifications

The work of the War Department Committee on revising specifications for military trucks is completed for this year. These specifications are similar to those for the 1½-ton truck issued a little less than a year ago and they call for 36 by 4-in. demountable tires. The Army now has 2,600 trucks but thousands more will be needed. The purchase of additional vehicles will probably begin in the near future.

General Tire Is Advertising Akron

Special Akron Correspondence

Believing that the name "Akron" is an asset to any company engaged in the manufacture of rubber products, T. F. O'Neil, advertising manager for the General Tire & Rubber Co., features the fact that General tires are made in Akron in all his national and local advertising. "Advertising Akron is advertising our tires," said O'Neil.

New York Distributors for Amazon

Pepoon & Peterson, 2176 Broadway, New York, have been appointed distributors for the Amazon Rubber Co. of Akron, Ohio.

New American Rubber Patents

ISSUED APRIL 10, 1917

1,221,887—To Robert M. Merriman, Akron, Ohio. Method of Making Four-Ply Lock-Cord Tires.

1,221,888—To Robert M. Merriman, Akron, Ohio. Four-Ply Lock-Cord Tire.

1,221,912—To Robert William Sampson, Whitestone, N. Y., assignor of one-half to Louis Schwab, East Orange, N. J. Tire Plug.

1,221,978—To Harry R. Decker, Houston, Tex. Tire Protector.

1,222,070—To William L. Christian and Philip Barker, Los Angeles, Cal. Shoe for Tires.

1,222,114—To John P. McCarty and Fritz W. Falck, Los Angeles, Cal., said Falck assignor to R. Gordon Matzene, Los Angeles, Cal. Surf Diving and Skimming Device.

1,222,169—To Elbert R. Winslow, Kearny, Nebr. Coin-Controlled Apparatus for Inflating Tires.

1,222,211—To Frank P. Johnson, Danville, Pa. Tire Fastening Device.

1,222,542—To Joseph W. Drummond, Chillicothe, Ohio. Demountable Rim.

1,222,555—To Alexander P. McArthur, Chicago, Ill. Fountain Pen.

ISSUED APRIL 17, 1917

1,222,604—To Chas. A. Daniel, Philadelphia, Pa. Mechanism for Curing Long-Length Rubber Hose.

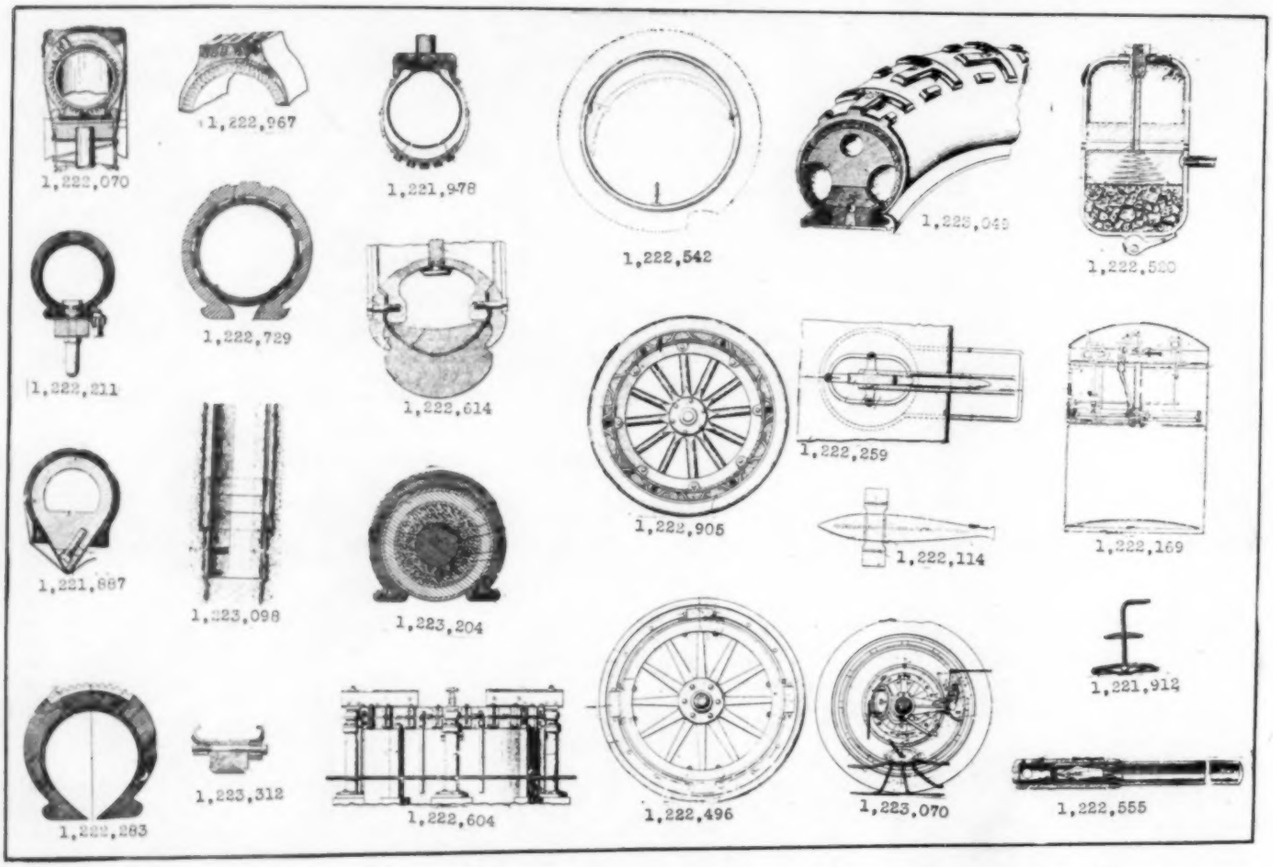
1,222,614—To Frank H. Field, Passaic, N. J. Vehicle Wheel and Tire.

1,222,729—To Frederick S. Bryant, Reading, Mass. Reinforcement for Pneumatic Tires.

1,222,905—To James D. Tipple, West Nashville, Tenn. Spring Tire.

1,222,906—To Alfred William Torkington, London, Eng. Tire.

1,222,967—To James Meade, Stoughton, Mass. Method of Preparing Adhesive Coatings and Applying them to Fabrics without the use of Solvents.



1,222,259—To Geo. W. Boynton, Boston, Mass. Device for Repairing Pneumatic Tires.

1,222,283—To Max Gray and Benjamin Harris, New York, N. Y. Vehicle Tire.

1,222,467—To Leo L. Rogers, Boston, Mass., assignor to E. C. Moore, New York, N. Y. Garter.

1,222,496—To William P. Tighe, Newark, N. J., assignor of seventy one-hundredths to (Mrs.) Elizabeth Estes, Newark, N. J. Resilient Tire.

1,222,520—To Matt Buzard, Fenton, Mich. Pneumatic Tire Inflator.

1,223,049—To Lie J. Hicks, Centerburg, Ohio. Automobile Tire.

1,223,070—To William H. Putnam, Brooklyn, N. Y. Anti-skidding Device for Vehicles.

1,223,098—To George Nymanning, Coalinga, Cal. Cashing-Shoe.

1,223,204—To Charles B. Reynolds, Sawtelle, Cal. Airless Tire-Core.

1,223,302—To Frank S. Walton, Philadelphia, Pa. Method or Process of Treating Automobile Tires and the Inner Tubes Thereof.

1,223,312—To Lyman M. Cooper, Detroit, Mich., assignor of one-half to T. Birk, Owosso, Mich. Demountable Rim.

Recent Incorporations

Bunker Hill Rubber Works, Carlinville, Ill.; capital, $20,000. Incorporators: John T. Daugherty, Paul Mulherin, James A. Mulherin.

The Republic Rubber Sales Company, Youngstown, Ohio; capital $10,000. Incorporators: John T. Harrington, J. W. Blackburn, U. C. De Ford, Clyde W. Osborne, Fred J. Helm.

Douse Rubber Company, New York City; capital, $2,500,000. To conduct a general trading, manufacturing and mercantile business. Incorporators: John H. Redmond, Walter S. Logan and Arthur Nigolorio, all of New York.

The Vernon Tire & Rubber Company, Inc., Mount Vernon, N. Y. Manufacture rubber tires, tubing, soles, heels, etc.; capital, $25,000. Incorporators, L. Silverstein, 18 Wilson place; A. M. Gross, 22 Wilson place; E. A. Partch, 515 South Seventh Avenue, Mount Vernon.

Paramount Puncture Proof Tire Company, New York City. Manufacture tires and rubber goods; capital, $100,000. Incorporators: S. A. Kleinberg, 1057 Faile street, Bronx; H. Levy, M. P. Hartman, 37 Liberty Street, New York City.

Commonwealth Tire Corporation, Wilmington, Del.; capital, $2,500,000. To manufacture master aluminum tires and supplies of all kinds. Incorporators: Martin E. Smith, Tmorley Smith and Artemas Smith, all of Wilmington.

The Reliable Tire & Repair Company, Dayton, Ohio; capital, $15,000. Incorporators: Fred A. Kline, George F. Kline, Charles Selby, I. L. Holderman, M. I. Suman.

Sternwear Tire & Tube Sales Company of Western Illinois, Peoria, Ill.; capital $2,000. Incorporators: Gustave Holste, W. T. Hess, Peter Anderson, Jr.

The Acme Tire & Supply Company, Cleveland; capital, $50,000. Incorporators: M. M. Gibbons, H. J. Alperin, M. Levine, Stella Alperin, Lena Alter.

Plexas Tire & Rubber Company, Philadelphia; capital, $50,000. Incorporator: William M. Moore, Philadelphia, Pa.

Ardmore-Akron Tire & Rubber Company, Ardmore, Okla.; capital, $1,000,000. Incorporators: John C. Harmony, Fox Wood, Roy G. Wood.

A. H. Langford, Inc., New Rochelle, N. Y. To manufacture rubber tires, etc. $10,000. Incorporators: A. H. Langford, 8 Center Avenue, New Rochelle, N. Y.; F. J. Farnell, Providence, R. I., B. C. Elliott, 1400 Broadway, New York City.

Illinois Tire & Supply Co., La Grange, Ill. $5,000. Incorporators: James W. Bell, Paul E. Sheehann, Willis Melville.

The Security Tube Co., Rutherford, N. J. $50,000. To manufacture automobile accessories. Incorporators: J. F. Lynch, Joseph Zimmerman and Eliot X. Norton, all of New York.

Cossey Tire & Supply Co., Muskogee, Okla. $5,000. Incorporators: Wallace Cossey, Cora B. Cossey, J. Frank Davis.

Tacoma Tire Service Co., Tacoma, Wash. $7,500. Incorporators: W. M. Maloney, F. C. Scheraton.

The Valley Tire Co., Memphis, Tenn. $5,000. Incorporators: Albert Wooldridge, Latham Wooldridge, O. N. Wilkins, R. F. Katz and Edward G. Riddick.

The Michigan Tire & Accessories Co., Grand Rapids, Mich. $100,000.

Delta Auto Supply Co., manufacturing rubber tires, $10,000. New York: Alfred V. Hines, Walter E. Ufer, Bailey C. Elliott.

Indian Tire Sales Co., Inc., acting as manufacturer and sales agent, manufacturing auto supplies, maintaining garages, manufacturing rubber and fibre tires, $10,000. Walden, N. Y.; David B. Parker, John Barnett and Joseph M. Hetzer.

Grimm Stamp & Badge Co., St. Louis, Mo. Henry A. Grimm, Erwin W. and Johanna Grimm. To manufacture, sell and deal in rubber stamps, badges, etc. $12,000.

Market of Manufactured Rubber Goods

NEW YORK, April 24, 1917.

The manufactured rubber goods market, outside of tires, is generally quiet. Government orders have not yet assumed full proportions and there is no crowding in the factories. This is normally the off season.

Tires

The tire business is very brisk and further price increases are sure to occur before long. Tire companies that did not raise their prices in April are planning to do so on May 1, and opinion has it that by the end of June prices will be at least 20 per cent higher than they are today.

Hundred-dollar tires, in large sizes, are expected. This would bring us back to the prices that prevailed seven or eight years ago. Consumers are recognizing the situation and many are covering their needs for the year.

The following condensed tire price lists bearing the date of April 2, were not available when the last issue of THE RUBBER AGE went to press:

GLOBE RUBBER TIRE MFG. CO.

Size	Plain	Non-Skid	Gray Tubes	Red Tubes
30x3	$18.20	$20.70	$3.05	$3.40
30x3½	23.70	26.20	3.60	3.95
32x3½	26.95	30.20	3.70	4.20
33x4	34.05	37.65	5.25	5.90
34x4	35.65	38.35	5.35	6.05
34x4½	43.95	49.35	6.60	7.45
35x4½	45.30	52.25	6.70	7.55
36x4½	46.60	55.40	6.90	7.75
36x5	55.55	63.15	8.05	9.10
37x5	56.85	67.55	8.20	9.20

THE B. F. GOODRICH CO.

Size	Plain	Non-Skid	Gray Tubes	Brown Tubes
30x3	$12.20	$12.80	$3.05	$3.35
30x3½	15.85	16.60	3.75	4.20
32x3½	18.55	19.45	3.85	4.30
33x4	25.95	27.15	5.00	5.55
34x4	26.50	27.85	5.15	5.70
34x4½	35.70	37.55	6.25	7.00
35x4½	37.35	39.20	6.45	7.15
36x4½	37.95	39.90	6.65	7.35
36x5	48.25	50.65	8.60	9.50
37x5	45.15	47.40	8.10	8.95

MOHAWK RUBBER COMPANY

Size	Plain	Non-Skid	Ribbed Tread	Tubes
30x3	$17.70	$21.35	$19.00	$3.55
30x3½	21.60	27.00	23 35	4.55
32x3½	25.25	31.00	27.30	4.90
33x4	33.80	39.80	36.75	6.10
34x4	35.00	41.30	37.85	6.25
34x4½	43.05	50.80	46.50	7.85
35x4½	44.85	53.00	48.45	8.00
36x4½	47.35	55.65	51.25	8.25
36x5	55.80	66.00	——	9.65
37x5	57.10	67.50	61.60	9.95

RACINE AUTO TIRE CO.

Size	Plain	Non-Skid	Cord	Gray Tubes	Red Tubes
30x3	$14.50	$15.50	——	$2.85	$3.40
30x3½	18.50	19.50	$32.00	3.25	4.25
32x3½	20.50	22.00	33.00	3.40	4.45
33x4	27.00	30.00	42.00	4.75	5.60
34x4	27.50	30.50	43.00	4.85	5.75
34x4½	34.50	40.00	51.00	6.05	7.50
35x4½	36.00	41.00	52.00	6.15	7.75
36x4½	37.00	42.00	54.00	6.25	7.80
36x5	43.00	49.00	——	7.50	8.95
37x5	44.00	49.50	66.00	7.65	9.25

Mechanical Goods

Business is quiet in mechanical rubber goods, though factories continue on schedule. Packing, belting and hose prices are responding to the increasing costs of manufacturing. Government orders have not as yet been sufficiently large to influence trade conditions.

Footwear

Shortage of leather has caused several New England shoe factories to close down. This shortage has increased the pressure on the rubber footwear industry. Many people who have previously worn leather shoes will this summer be shod with the less costly canvas and rubber shoes. Factories are working to capacity and are having difficulty in making prompt deliveries on current orders.

Druggists' Sundries

The druggists' sundries trade is going through its annual quiet season. No large government orders have been received but such orders as are expected will be easily handled by the trade.

The Fabric Market

NEW YORK, April 24, 1917.

Another sharp break in raw cotton occurred on April 20 and carried July contracts to 18.98, or 45 points under the closing prices the day before, and no less than $12.60 a bale below the high level of April 9, a decline within less than two weeks of 200 to 250 points. At the opening of the New York Cotton Exchange on April 23, there first came an upturn on strong cables, talk of firmer spot markets and some buying by local trade interests. There was a certain amount of covering. Later on, however, things changed and speculation showed no enthusiasm.

This state of affairs is probably due to the fact that nobody knows what the Government may do in the way of fixing maximum prices; to the fact that weather reports from the cotton districts are in the main favorable and perhaps also to the report that the Federal War Risk Bureau had increased insurance rates on American shipping 3 to 5 per cent owing to similar increases abroad. The present situation in the market is that no man knows whether his judgment of the market amounts to anything or not. The prevailing feeling is that best judgment may be nullified at any moment by some unexpected happening. There is, therefore, a disposition to take as few risks as possible.

EGYPTIAN COTTON

Reports by mail from Alexandria under date of March 16 show a firm undertone in the market there. There appears to have been much controversey in Alexandria about the effect that the decision of the British Government prohibiting the export of raw cotton from England, including transhipment to America, would have on the market, but finally it was realized that the proclamation will not interfere with direct shipments to America. As yet, no arrangements have been made for such direct shipments, but no doubt direct freight to America will be available shortly.

Medium and inferior Sakellarides grades continue to be freely offered at Minet-el-Bassal and prices in these qualities rule in buyers' favor; all other qualities and varieties are difficult to buy in quantity.

Sowing operations for the 1917 crop are being pushed on with greater energy everywhere. The extra early sowings, that is to say those sown before February 25, have appeared above the ground. The result of the first germination averages from 80 to 85 per cent against 100 per cent last year; the poorer germinating is due to the bad quality of the seed.

The Egyptian Minister of Agriculture publishes the following report, dated April 1:

COTTON:—The climatic conditions have not been quite favorable in general, in so far as the weather has shown sharp and recurrent fluctuations. In Lower and Middle Egypt a rather cold temperature and heavy rains have delayed the preparation of the land to some extent, so that with the exception of Menufia and Gharbia Provinces, very few cultivators have sown up to the last week of the month. In Upper Egypt, the weather having been more propitious, was taken advantage of by the farmers for the thorough preparation of the soil and early sowing. Water supply was generally sufficient after the reopening of the canals. Plowing, ridging, sowing and watering operations are general though retarded in the northernmost regions of the Delta by weather conditions. Early sown cotton put in at the beginning of the month has germinated well.

As matters stand, it can be said that forty per cent of the total cotton area in the Delta has been already sown; the North Delta, as usual, being less advanced. The most critical period for germination is now approaching, and it may be said that, on the whole, the crop has had about an average start so far.

SEA ISLAND COTTON

Savannah and Charleston report very little planted; preparation poor; some land not prepared at all. General conditions point to nothing better than a fair crop to be expected under most favorable conditions from now until picking season. It is stated that little or no corn has been planted in the Eastern belt and that unless a good crop is raised the food situation will be serious. The weather has been generally fair in the Eastern belt.

MANY REJECTIONS IN LONG STAPLE COTTON

Cotton brokers had a great deal of trouble last year with rejections of long staple cotton but it is agreed that this year's rejections make those of last season appear slight. It is estimated that the total rejections since the first of last September are equal to between 20 and 35 per cent of the sales. The percentage varies greatly with the different brokers according to the character of their Southern connections.

The rejections are on the claim that the cotton shipped was not equal to that specified at the time of sale. Brokers attribute their trouble principally to the great rise that has taken place in cotton values this season. Shippers have sold short, and then when they have found themselves badly caught, they have tried to reduce their losses by skimping on grade and staple.

Some say that the flood of rejections is partly due to the fact that brokers sold more or less cotton of last year's types, whereas the staple crop this year was not equal to that of last year. Manufacturers have discovered more and more the advantage of buying spot cotton on redrawn samples, and those who were reluctant to do this three months ago because they have to pay for the cotton at once when they buy spots are now coming around to it in order to avoid trouble over their cotton

In Sea Islands extra choice is commanding about 65 cents. The lack of Egyptian cotton still operates to cause special demand for the long staple American cotton and the supply is becoming more and more scarce. Cotton shorter than an inch and a quarter has not advanced much of late.

YARNS

The tone of the cotton yarn market can be said to be firm and quiet. There is a large demand for the quality used in duck mills and the prices offered for singles for twisting are of a fancy character. Lack of twisters for multi-plied strands is making it impossible to handle all of the business offered.

FABRICS

The cotton fabric market is quiet but in most cases remains firm.

TIRE FABRICS

There has been little activity in tire fabrics since our last market review and prices remain substantially the same as they were on April 10.

HOSE AND BELTING FABRICS

Hose and belting ducks are being sold readily in spite of the high prices that prevail in these lines; many buyers appear to be covering themselves for the balance of the year. Heavy belting duck is very scarce in the market.

DRILLS, SHEETINGS AND OSNABURGS

The market is normally quiet in these materials, though prices for 37-inch drills are unusually weak compared with those for other cotton goods. Twills are strong, due to large demand for them for Government purposes.

GARMENT CLOTH

Trading in the wool markets has been keen with manufacturers buying quite freely.

England has promulgated an order forbidding private concerns from buying or selling or even from offering to buy or sell raw wool, or tops, or noils made therefrom, except by special permit.

Manufacturers of woolen fabrics for proofing still refrain from making quotations.

BURLAPS

Prices for burlaps are soaring as the position of this line is very uncertain. News has been received of the sinking of the S. S. Malakand, jute and burlap laden from Calcutta to Dundee. Marine insurance rates jumped up to 5½c per cent.

The costs of replacement for burlaps are above the parity of the spot market and it is generally believed that all ships now westward bound from India will be taken over by the British Government and will not return to the Middle East. This means that it will be almost impossible to find freightage for this traffic.

Ships plying between India and Cuba will also be greatly reduced in numbers and most of their cargo space will be taken up for rice. The banking situation in India is another factor. There is a shortage of available funds for financing exports due to the fact that London has ceased to send gold to India.

NEW YORK QUOTATIONS

April 24, 1917

DRILLS			
37-inch 2.35-yard		yd.	$ .15½
37-inch 2.75-yard			.13
37-inch 3.00-yard			.12
37-inch 3.25-yard			.11½
37-inch 3.50-yard			.10¾
37-inch 3.95-yard			.09⅞
38-inch 2.00-yard	Southern		.40
38-inch 2.00-yard	Northern		.41
40-inch 2.47-yard	Southern		.16
40-inch 2.47-yard	Northern		.16¾
52-inch 1.90-yard	Southern		.21
52-inch 1.90-yard	Northern		.22
52-inch 1.95-yard	Southern		.19½
52-inch 1.95-yard	Northern		.19½
60-inch 1.52-yard	Southern		.26¼
60-inch 1.52-yard	Northern		.27
MECHANICAL DUCKS			
Hose (spot)		lb.	.39
Hose (future)			.39
Belting (spot)			.40
Belting (future)			.39
SHEETINGS			
40-inch 2.35-yard		yd.	.15
40-inch 2.50-yard			.14
40-inch 2.85-yard			.12¾
40-inch 3.00-yard			.12¼
40-inch 3.25-yard			.10¾
40-inch 3.60-yard			.11¼
40-inch 3.75-yard			.10
40-inch 4.25-yard			.08¾

TIRE FABRICS		
1717¼-ounce Sea Island combed, sq. yd.		$1.50@1.60
17¼-ounce Egyptian, combed		1.30@1.40
17¼-ounce Egyptian, carded		1.25@1.35
17¼-ounce Peelers, carded		.70@ .75
17¼-ounce Peelers, combed		.90@1.00
American Carded Staple, 12 to 20 yarn, per lb. (pound basis)		.52
American Carded Staple, 8 to 10 yarn, per lb (pound basis)		.42
TWILLS FOR PROOFING		
37-inch 2.85-yard	yd.	$ .14
37-inch 2.35-yard		.16
37-inch 2.10-yard		.18

BURLAPS (Carload lots.)		
40-inch 7½-ounce	per 100 yards	$7.85
40-inch 8-ounce		8.00
40-inch 10-ounce		8.85
40-inch 10½-ounce		9.10
COTTON STOCKINETTES 52-inch.)		
E—11½-ounce	yard	$ .70
A—11-ounce		.50
DUCK		
Single Filling (pound basis)	lb.	$ .35
Double Filling (pound basis)		.45

Chemicals and Compounding Materials

NEW YORK, April 24, 1917.

An extremely firm undertone prevailed for practically all chemicals and compounding materials and numerous important upward revisions in prices were named. The demand was active, consumers in many instances being desirous of entering into contracts extending over the second half of the year, notwithstanding the fact that prices named were abnormally high. The fact that the Government is about to place important business in chemicals, etc., had a strengthening influence upon the market. Supplies are not moving freely, due both to the growing scarcity of basic materials and the freight congestion. The interval occasioned a general uplift in prices for refined sulphur, and the lead products. Sulphuret of antimony was strong in all quarters. There was little if any change in the dry color situation. Benzol and naphthas were firmer at the close. Vegetable oils were strong.

SULPHUR

Refiners advanced prices 50c. per 100 lb. The uplift was brought about by the high cost of crude sulphur and active buying by foreign interests. It was reported that France was in the market for large quantities of refined sulphur. Revised prices follow: Roll, $2.70 @ $3.00; flour, $2.85 @ $3.25; flowers, $3.05 @ $3.45. The inside figure applies to car-lots. Crude sulphur was wholly nominal around $45 per ton, f.o.b. New York, with producers apparently well sold up.

ANTIMONY

Demand for sulphuret of antimony was fairly active, consumers in many instances looking for long-time contracts. Producers here appear to be well sold up. The continued strength in the position of the metal was a factor in the market. Spot antimony was quoted around 34 @ 35c. per pound, while on forward deliveries 17c. might have been done. Red sulphuret of antimony was offered by producers on the basis of 25c. per pound, with the golden at 28c. and the crimson at 54 @ 56c.

ANILINE OIL

There was a firmer market for aniline oil, due chiefly to the upward tendency of basic materials. Several large producers of aniline oil are sold up for some time ahead. Quotations ranged from 28 to 30c. per pound, according to quantity and seller.

BENZOL

Large contracts were placed by consumers outside of the rubber trade and the market towards the close was decidedly firmer. Contract business went through on the basis of 55c. per gallon, in tanks, f.o.b. works. Quotations of leading producers were repeated at 55 @ 60c. per gallon, according to quantity and delivery.

NAPHTHAS

The market closed strong, following another uplift in crude oil. Pennsylvania crude oil established a new high record, closing at $3.10 per barrel, at the wells. Demand for naphthas was active. For the 72 @ 76 degrees naphtha, in steel barrels, refiners held out for 33c. per gallon. Solvent naphtha (coal-tar base) closed unchanged and easy at 20 @ 25c. per gallon.

LEAD PRODUCTS

Corroders advanced prices for lead products from ¼ to ½c. per pound. Owing to the rise in the cost of the metal the advance was not unexpected. Pig lead is now selling around 9½ @ 9¾c. per pound, with offerings limited. White lead, basic carbonate, closed at 9½ @ 9¾c. per pound, the inside figure obtaining for round lots. Sublimed white lead, blue or white, was advanced to 9 @ 9¼c. per pound. Dry red lead was marked up to 11c. per pound for round lots. Litharge was advanced ½c., establishing the market at 10½ @ 10¾c. per pound.

ZINC OXIDE

A fair volume of business was placed for zinc oxide for forward delivery, but spot trading was inactive. An easier market obtained for spelter, but this failed to influence sellers of oxide. American process zinc oxide was quoted on the basis of 12c., spot delivery, while on forward contracts 9¾c. was asked on 50-ton lots. French process oxide for delivery over the second quarter held at 15 @ 15¼c. for the red seal, 15½ @ 15¾c. for the green seal, and 16 @ 16¼c. for the white seal.

COLORS

Owing to the constantly fluctuating market for basic materials prices for dry colors of chemical origin were firm and more or less nominal. Prussian blue, potash base, held at $1.40 @ $1.60 per pound. Producers of blacks are reported to be well sold up. Lampblack was quoted from 14 to 20c. per pound.

Prices Current for Chemicals, Fillers, Colors, etc.

Acetone	lb.	.27½	@	.28
Acids, Acetic, 28%	lb.	.04½	@	.05
Carbolic, C. P.	lb.	.40	@	.45
Cresylic, 95%	gal.	.90	@	.95
Muriatic, 20 deg.	lb.	.01¾	@	.02
Muriatic, 22 deg.	lb.	.02	@	.02½
Nitric, 36 deg.	lb.	.05¾	@	.06
Nitric, 40 deg.	lb.	.06½	@	.06¾
Sulphuric, 60 deg.	lb.	.01	@	.01½
Tartaric, crystals.	lb.	.76	@	.80
Aniline oil	lb.	.28	@	.30
Antimony, metal, spot	lb.	.34	@	.35
Oxide	lb.	.18	@	.20
Sulphuret, red	lb.	.25	@	.26
Sulphuret, golden	lb.	.28	@	.30
Sulphuret, crimson.	lb.	.54	@	.56
Asbestos	ton	22.00	@	45.00
Asphaltum, Egyptian	lb.	.20	@	.25
Domestic	ton	18.00	@	25.00
Barium sulphate, technical	lb.	.04¾	@	.05¾
Chloride	lb.	.04⅞	@	.05¼
Barytes, prime white imported	ton	38.00	@	40.00
white, domestic.	ton	30.00	@	32.00
off color, domestic.	ton	24.00	@	26.00

Benzol, pure	gal.	.55 @	.60
Beta-naphthal, sublimed	lb.	.80 @	.85
unsublimed	lb.	.75 @	.80
Blacks, Drop	lb.	.07 @	.12
Ivory	lb.	.16 @	.30
Carbon gas	lb.	.22 @	.32
Lampblack	lb.	.14 @	.20
Mineral blacks	ton	20.00 @	30.00
Blues, Prussian	lb.	.85 @	1.50
Soluble	lb.	1.40 @	1.60
Ultramarine	lb.	.20 @	.40
Browns, Sienna, Italian, burnt and powdered	lb.	.06 @	.10
burnt, lump	lb.	.04¼ @	.06
American, burnt and powdered	lb.	.02 @	.03
Umber, Turkey, burnt, powdered	lb.	.04 @	.05
American, burnt	lb.	.03 @	.03½
Cadmium sulphide, yellow	lb.	3.70 @	3.80
Carbon bisulphide, bulk	lb.	.06 @	.07
tetrachloride, drums	lb.	.16½ @	.17
Caustic Soda, 76 @ 78%	lb.	.04¾ @	.05
Chalk, precipitated, light	lb.	.04½ @	.04¾
heavy	lb.	.03¾ @	.04¼
China clay, domestic	ton	20.00 @	25.00
imported	ton	30.00 @	40.00
Fossil flour	lb.	.06 @	.10
Gilsonite	ton	40.00 @	45.00
Glue, extra white	lb.	.26 @	.35
medium	lb.	.23 @	.25
low grade	lb.	.20 @	.22
Glycerine, C. P. (drums)	lb.	.56 @	—
Graphite, flake (bbl.)	lb.	.25 @	—
powdered (bbl.)	lb.	.10 @	—
Green, chrome	lb.	.32 @	.50
Ground glass (fine)	lb.	.02½ @	—
Hexamethylene	lb.	.65 @	.70
Indian red, standard	lb.	.08 @	.10
Infusorial earth, powd'd.	ton	60.00 @	—
bolted	ton	70.00 @	—
Iron oxide, red, reduced grades	lb.	.04 @	.05
red, pure, bright	lb.	.12 @	.14
Lead, red oxide of	lb.	.11 @	.11½
sublimed blue	lb.	.09 @	.09½
white, basic carbonate	lb.	.09½ @	.09¾
white, basic sulphate	lb.	.09 @	.09½
Lime, flour	lb.	.01½ @	.01¾
Litharge	lb.	.10½ @	.10¾
English	lb.	.11 @	.12
sublimed	lb.	.09¾ @	.10¼
Lithopone, domestic	lb.	.06¼ @	.06¾
Magnesia, carbonate	lb.	.12 @	.14
calcined, heavy	lb.	.12 @	.14
calcined light	lb.	.65 @	.70
Magnesite, calcined, pwd.	ton	70.00 @	—
Mica, powdered	lb.	.03¾ @	.05
Mineral rubber (asphaltum base)	ton	40.00 @	60.00
Naphtha, motor gasolene (steel bbls.)	gal.	.24 @	—
68 @ 70 degrees (steel bbls.)	gal.	.30 @	—
70 @ 72 degrees (steel bbls.)	gal.	.31 @	—
73 @ 76 degrees (steel bbls.)	gal.	.33 @	—
machine (wood bbls.)	gal.	.41 @	—
Oil corn, crude	cwt.	15.25 @	15.50
corn, refined	cwt.	16.51 @	16.56
linseed (bbl)	gal.	1.20 @	1.21
palm, Bonny	lb.	.13¼ @	.13½
pine, yellow	gal.	.56 @	.59
rapeseed, refined	gal.	1.30 @	—
rapeseed, blown	gal.	1.35 @	—
rosin, first rectified	gal.	.38 @	.40
tar (commercial)	gal.	.22 @	—
Orange mineral, American	lb.	.13 @	.13¾
imported	lb.	.16 @	.20
Petrolatum, bbls., amber	lb.	.04 @	.04½
pale yellow	lb.	.04½ @	.04¾
Pine tar	bbl.	9.25 @	9.50
Pitch	bbl.	4.25 @	4.75
Plaster of paris	lb.	1.50 @	1.70
Rosin (common to good), @ 280 lbs.	bbl.	6.15 @	6.25
Rotten stone, powdered	lb.	.02½ @	.04
Rubber substitute, black	lb.	.09½ @	.12½
white	lb.	.14 @	.18
brown	lb.	.13 @	.17
Shellac, fine orange	lb.	.63 @	—
T. N.	lb.	.57 @	—
bleached, commercial	lb.	.55 @	.56
bleached, bone dry	lb.	.67 @	.68
Silex (silica)	ton	24.00 @	34.00
Soapstone, powdered	ton	14.00 @	20.00
Starch, corn, powdered	lb.	.05⅛ @	.05¼
Sulphur, crude	ton	*45.00 @	—
Sulphur, roll, per 100 lbs. in	bbls.	2.70 @	3.00
flour		2.85 @	3.25
flowers		3.05 @	3.45
Talc, American	ton	13.00 @	18.00
French	lb.	.15 @	.22
Toluol, pure	gal.	1.75 @	2.00
Tripolite earth	ton	60.00 @	65.00
Turpentine, pure gum spirits	gal.	.48 @	.50
wood	gal.	.44 @	.46
Venice, artificial	gal.	.12 @	.13
Vermilion, Chinese	lb.	2.50 @	2.75
English	lb.	2.25 @	2.50
Wax, beeswax, crude yel.	lb.	.42½ @	.44½
ceresin, white	lb.	.18 @	.22
carnauba, No. 3	lb.	.36 @	.37
ozokerite, black	lb.	*.60 @	.70
green	lb.	*.80 @	.90
montan	lb.	.30 @	—
paraffin, refined 118/120 m. p. (cases)	lb.	.07½ @	.07¾
123/125 m. p. (cases)	lb.	.08½ @	.08¾
128/130 m. p. (cases)	lb.	.09 @	.09¾
133/136 m. p. (cases)	lb.	.10½ @	.10¾
crude, white, 117/119 m. p. (bbls.)	lb.	.06½ @	.07
yellow, 124/126 m. p. (bbls.)	lb.	.07 @	.07½
Whiting, commercial	cwt.	.95 @	1.10
Paris, white, American	cwt.	1.25 @	—
English cliffstone	cwt.	1.50 @	—
Yellow ochre	lb.	.03 @	.05
chrome, c. p.	lb.	.24 @	.28
Zinc oxide, American process, horsehead brand	lb.	†.09¾ @	.09⅞
selected	lb.	†.10¼ @	—
"XX red"	lb.	†.09¾ @	.10
French process, green seal	lb.	.15½ @	.16
red seal	lb.	.15 @	.15½
white seal	lb.	.16 @	.16½
Zinc substitutes	ton	25.00 @	—
Zinc sulphide, pure	lb.	.07 @	—

*Nominal.
†Contract prices.

The Crude Rubber Market

NEW YORK, April 24, 1917.

Intimation from Washington to the effect that the Government has under consideration the proposition of imposing an import tax on crude rubber, amounting to about 10c. per pound, for the purpose of raising revenue for the war, caused excitement to run high in the local market. War risk insurance has been advanced 2 per cent, and freight rates from the East have again been raised sharply. These developments brought out a generally firm feeling in the trade and prices for nearly all descriptions show a higher range.

The news of the proposed tax sent buyers into the market. It was reported that one of the leading manufacturers was a heavy buyer of spot rubber, practically cleaning up stocks not in firm hands. Prior to that time business in plantations for forward delivery was active. First latex pale crepe and ribbed smoked sheets were traded in on the basis of 75 @ 76c. per pound, July-December delivery. Most importers later withdraw their offerings of futures and the market on distant deliveries closed with prices wholly nominal.

That the Government will take a census of the stock of crude rubber now held in this country was received calmly by operators, as it is not thought that this action will be taken for the purpose of placing any restrictions upon traders. In fact, since the United States has entered into the war importers find that they are no longer hampered in securing permits for the release of rubber from Great Britain. However, the problem of securing freight accommodations from the East is daily growing more serious, and until this scarcity of ocean tonnage is relieved delayed arrivals must be taken as a matter of course.

The London market has been irregular during the last two weeks, closing lower on profit-taking by speculators. First latex closed today at 36d. per pound, April-June shipment, which compares with 37¾d. a fortnight ago. Arrivals in London have been larger, which brought out slight selling pressure.

First latex closed here at 82½c. per pound, spot delivery, with ribbed smoked sheets held at the same figure.

Para descriptions were featureless, upriver fine holding at 76½c. per pound, and coarse at 52c., with caucho ball also available at 52c.

Centrals were firmer, closing on an average of 1c. higher. An advance of 25 per cent in freights from Mexican and Central American ports was a factor. Corinto, prime, closed at 51c. asked. Guayule was firmer on scanty offerings from primary markets. Imports of Guayule gum for the eight months ending with February amounted to 1,410,272 lb., which compares with 1,803,978 lb. for the corresponding period a year ago, and 2,844,734 lb. in 1915.

Imports of rubber and substitutes for the eight months ending with February, for the last two years, follow:

EIGHT MONTHS ENDING FEBRUARY.

	1917. Pounds.	1916. Pounds.
Balata	2,031,370	1,781,831
Guayule	1,410,272	1,803,978
Gutta-jelutong	15,007,860	16,453,995
Gutta-percha	1,650,608	1,606,914
India rubber	174,197,460	159,560,919
Scrap or refuse	11,209,177	10,938,869

Current Prices—

Para—Up-river fine	lb.	76½@..
Up-river medium		71 @72
Caucho ball, upper		52 @52½
Madeira fine		78 @79
Ceylons—Smoked sheets, ribbed		82½@83
Smoked sheets, plain		81½@..
First Latex Pale Crepe		82½@83
Clean Brown Crepe		78½@..
Centrals—Corinto, prime		51 @..
Esmeraldo, prime		50 @51
Nicaragua Scrap		50 @51
Mexican Scrap		50 @..
Balata, Sheets		60 @61
Balata, Block		48 @..
Guayule		43 @45
Africans—Rio Nunez, string		67 @..
Massai, red		65 @66

Scrap Rubber Market

NEW YORK, April 24, 1917.

The scrap rubber market has been characterized by routine dealings, but has developed a somewhat firmer tone. The accumulation in boots and shoes has been materially reduced. Prices are generally holding steady but boots and shoes show an upward tendency. The following quotations are those given by middlemen to consumers:

Domestic Scrap—

Boots and shoes, No. 1 per lb.	8¾@ 9
Trimmed arctics	7 @ 7⅛
Bicycle tires	4¾@ 5
Auto tires	6¾@ 6⅞
Solid tires	6 @ 6½
No. 1 inner tubes	26 @26½
No. 2 inner tubes	12½@12¾
Hose	1⅝@ 2
Red tubes	12 @12½
Black rubber	3 @ 4

Foreign Scrap—

Boots and shoes, No. 1	8½@ 8¾
Auto tires	6 @ 6¼
White mixed	8 @ 8¼
Red mixed	6¾@ 6⅞
Airbrakes	3 @ 4

Crude Rubber Shortage Is Feared

Special Akron Correspondence

Though the market price of crude rubber today is exceptionally low, considering conditions under which it is being brought to American ports, a serious shortage is threatened here unless it is shipped in larger quantities from England, according to an official of a large Akron company.

No shortage exists in the supply of crude rubber, because it is being produced in immense quantities from plantations, which are growing in production each year. It reaches British ports from the East, but the German submarine menace hinders shipping to America, where it is in greatest demand. Crude rubber now is well below the dollar mark per pound. Five years ago it reached $3.25 per pound. At that time a large percentage of the supply was wild rubber from South America, and plantation rubber was only beginning to get a foothold in the market.

Statistics of Crude Rubber and Tires

American and British Figures for Crude Rubber in March—Exports from Brazil, Peru and Ecuador—Tires in Brazil

British Crude Rubber Statistics for March

The following statistics supplied by S. Figgis & Co., 45 Fenchurch street, London, give interesting figures of the amount of crude rubber imported and delivered, and also of the stocks in hand for the month of March, 1917:

London—	Imported. Tons.	Delivered. Tons.	Total Stock. 1917. Tons.	1916. Tons.	1915. Tons.
Para	....	....	....	....	....
Plantation—Ceylon and Malay.	7,143	6,477	10,993	6,484	6,877
Rangoon and Assam	....	....	3	5	6
Penang	31	39	61	62	40
Borneo	....	....	8	9	290
Malaysian	....	....	....	....	1
Mozambique	....	....	7	7	173
Madagascar	4	1	18	5	3
W. I. and South American	....	5	15	9	14
Mattogrosso	....	12	2	6	25
African	17	38	109	48	31
Various	16	1	37	26	7
	7,211	6,573	11,253	6,661	7,467
Liverpool—					
Para	876	904	130	430	1,178
Peruvian	242	187	166	188	124
Mollendo	....	....	....	....	....
Manicoba, Ceara, Mangabiera, Pernambuco, etc.	50	94	144	36	30
Carthagena, etc.	....	....	....	....	....
African	93	52	237	150	181
	1,267	1,237	677	804	1,513
Total (England)	8,478	7,810	11,930	7,465	8,980

Shipments of Eastern Plantation Rubber:

1917—March, *12,000 tons. Total, Jan.-March, *35,000 tons. Price: Smoked Sheet, 3/0½: pale Crepe, 3/0¾—31st March.

1916—March, 9,915 tons. Total, Jan.-March, 29,855 tons. Price: Smoked Sheet, 3/4¼; pale Crepe, 3/4½—31st March.

* Estimated.

Some foreign tire companies maintain their own factory branches. Prior to the war France furnished the greater number of tires used. The United States supplied less than 5 per cent. Italian manufacturers furnished a large proportion in 1915, but during 1916, in spite of large exports to Brazil, fell to second place, with American manufacturers in the lead.

The accompanying table of imports of pneumatic tires for the three years preceding 1916, and the first nine months of 1916 was compiled by the American vice-consul at São Paulo and is for his consular district

As a result of a recent agreement between representatives of certain American manufacturers and European factory agents, tire prices in certain states of Brazil are maintained on a fixed non-competitive basis.

Rubber Shipments from Brazil and Peru

The total exports of crude rubber from Para, Manaos, and Itacoatiara, Brazil, and Iquitos, Peru, during February, 1917, amounted to 12,911,166 lbs., compared with 10,247,814 lbs. for the same month in 1916. Shipments to the United States aggregated 8,842,993 lbs., and to Europe 4,008,173 lbs., compared with 6,307,849 and 3,939,765 lbs., respectively, last year.

The several grades of rubber are shown in the following table:

Grade.	From Para, Brazil, to—		From Manaos, Brazil, to—		From Itacoatiara, Brazil, to—		From Iquitos, Peru, to—	
	United States.	Europe.	United States.	Europe.	United States.	Europe.	United States.	Europe.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Fine	2,427,383	1,390,321	1,471,076	1,419,369	5,996	1,984	43,690	.....
Medium	274,348	95,917	338,756	60,824	3,086	.....	363	.....
Coarse	1,608,734	209,410	732,799	39,554	.....	1,432	13,756	.....
Caucho	971,372	402,179	822,573	441,562	15,872	5,621	53,189	.....
Total	5,341,837	2,097,827	3,365,204	1,961,309	24,954	9,037	110,998	.....

American Tires in Brazil

Practically all the rubber tires used in Brazil are imported and are sold by several classes of merchants. General sales agencies for tires are held in some cases by wholesale dry-good importers, in other by importers of wine, of automobiles, and other merchandise.

Country of origin.	1913.	1914	1915.	Jan. 1 to Sept. 30, 1916.
Belgium	.....	$62,157	.....	.....
France	$188,330	167,363	$38,957	$46,156
Germany	34,649	23,330	.....	.....
Great Britain	777	21,510	2,702	111
Italy	46,188	8,559	186,899	166,007
United States	11,240	9,015	165,536	221,257
All others	376	2,416	.....	.....
Total	$281,560	$294,350	$394,094	$433,531

Rubber Exports from Ecuador

Figures giving the quantity of crude rubber exported from Ecuador during 1916 have not been published, but, according to semi-official sources, exports from the port of Guayaquil amounted to 132,000 pounds, of which 121,317 pounds went to the United States.

Importations of Crude Rubber Into the United States in March, 1917

Figures compiled by The Rubber Association of America, Inc., 17 Battery Place, New York City. (Estimated net weights.)

PLANTATIONS

From	Tons
London	5,051
Hull	18
Singapore	5,362
Penang	69
Colombo	947
Batavia	1,491
Japan,* other countries	900
	13,838

* From Colombo and Singapore.

PARAS

Para	3,132
Manaos	469
Iquitos	370
Cristobal	10
	3,981

AFRICANS

Liverpool	76
Hull	129
London	72
Bordeaux	2
Lisbon	61
	340

MANICOBAS AND MATTO GROSSO

Rio de Janeiro	33
Bahia	100
Pernambuco	5
	138

† CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	50
Guayule (Mexico)	277

† Note.—Owing to the war, we are temporarily unable to furnish complete statistics for rubber arriving on boats from Central America.

COMPARISON 1916-1917

	Jan., 1917.	Feb., 1917.	March, 1917.
Plantations	9,532	7,224	13,838
Paras	2,123	1,977	3,981
Africans	642	660	340
Manicoba and Matto Grosso	144	114	138
Centrals	237	138	50
Guayule	110	49	277
Totals	12,788	10,162	18,624
	Jan., 1916.	Feb., 1916.	March, 1916.
Plantations	6,825	6,272	7,287
Paras	1,543	2,218	2,015
Africans	336	683	481
Manicoba and Matto Grosso	230	193	90
Centrals	172	142	109
Guayule	56	89	88
Totals	9,162	9,597	10,070

Arrivals of Plantation Rubber for March, 1917—Showing Ports of Origin and Destination

From	Manifested to	Tons
Singapore	Akron	954
Singapore	Akron (Entered at Port of Cleveland)	192
Singapore	Seattle	263
Singapore	New York	3,953
Penang	New York	28
Penang	Akron	37
Penang	Seattle	4
Colombo	New York	945
Colombo	Seattle	2
Batavia	New York	964
Batavia	San Francisco	136
Batavia	Seattle	13
Batavia	Akron	378
London	New York	5,051
Hull	New York	3
Hull	Boston	15
‡Japan	Akron	492
Japan	Seattle	300
Japan	New York	108
		13,838

‡ Trans-shipments from Colombo and Singapore, and all others.

ARRIVALS OF PLANTATIONS BY PORTS

	Tons	
Atlantic Ports:		
New York	8,413	
Boston	15	
		8,428
Pacific Ports:		
San Francisco	2,166	
Seattle	3,052	
		5,218
Port of Cleveland		192
Total		13,838

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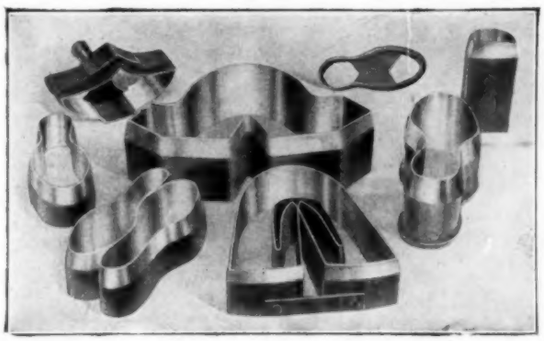

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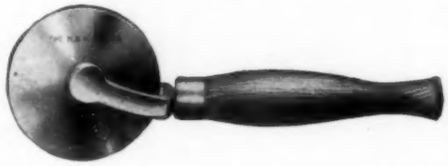

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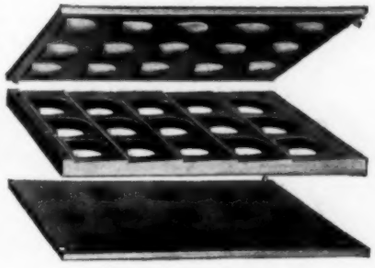

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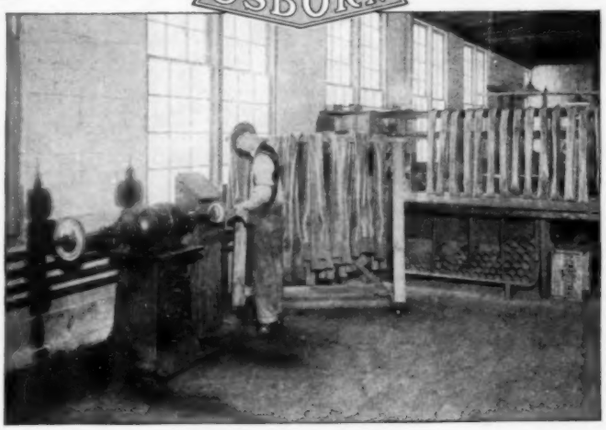

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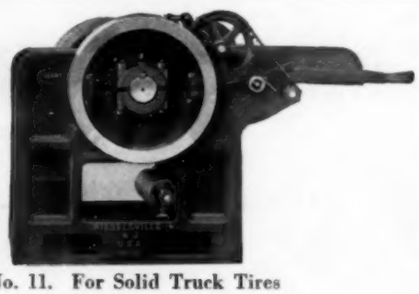

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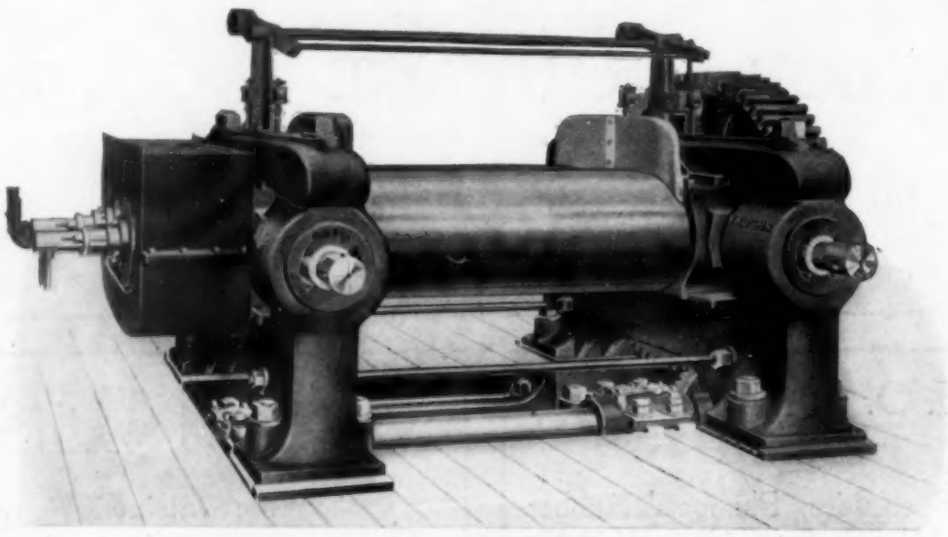

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